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DOI-BLM-ID-B030-2011-0006-EA

Nickel Creek FFR Grazing Permit Renewal

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U.S. Department of the Interior
Bureau of Land Management
Owyhee Field Office
20 1st Ave West
Marsing, ID 83639

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1.0 Introduction

The Bureau of Land Management (BLM), Owyhee Field Office (OFO) has prepared this Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA), and other relevant Federal and State laws and regulations. This EA analyzes the effects of alternatives for livestock management on the Nickel Creek Fenced Federal Range (FFR) Allotment (#0657). The 1999 Owyhee Resource Management Plan (ORMP) defines an FFR allotment as a small amount of public land fenced with a large amount of private land (ORMP page 137) (USDI-BLM 1999b).. This EA also serves as a tool to help the Authorized Officer make an informed decision that is in conformance with ORMP objectives and in compliance with the Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management (Standards) (USDI-BLM 1997). It discloses the direct, indirect, and cumulative environmental effects that would result from the various alternatives. Because of the mixture in ownership (private, state, and public) and different management objectives on FFR allotments, the BLM tries to work closely with the private landowners to develop a permit that meets BLM multiple use objectives.

The OFO issued a grazing decision on the Nickel Creek FFR Allotment in 2003, which was subsequently litigated. During the litigation process, the Honorable B. Lynn Winmill remanded the Nickel Creek FFR Allotment decision for consistency with his decision dated 12/30/2009. As part of a settlement agreement, BLM agreed to complete new NEPA and issue new grazing decisions on or before December 31, 2013. This EA fulfills that obligation as it pertains to the Nickel Creek FFR allotment.

The Nickel Creek FFR Allotment is located near Juniper Mountain, in Owyhee County, Idaho, approximately 30 miles south of Mud Flat Road (Figure 1.1). The allotment is grazed by the Juniper Mountain Grazing Association (JMGA), which currently consists of three different operators. This allotment is divided into 10 pastures (4, 6, 9, 11, 14, 19, 21, 23, 24 and 25) scattered over approximately 20 air miles, with most pastures subdivided into individual fields. Some fields have less than 20 acres of BLM-managed lands, while other fields have over 100 acres. The allotment contains approximately 78% private land, 19% BLM-managed lands, and 3% Idaho state lands. Because this allotment includes a large acreage of private land, under the current permit the livestock numbers and dates have varied annually as determined by the permittee, provided that the 109 animal unit months (AUMs) permitted are not exceeded and unacceptable impacts to public land resources do not occur.

The elevations within the Nickel Creek FFR Allotment range between 4,750 feet to 5,730 feet, with precipitation from eight to 16 inches per year. Most of the perennial running water is located on private land, and because livestock tend to graze near water, cattle on the allotment tend to spend the majority of the season grazing private land.

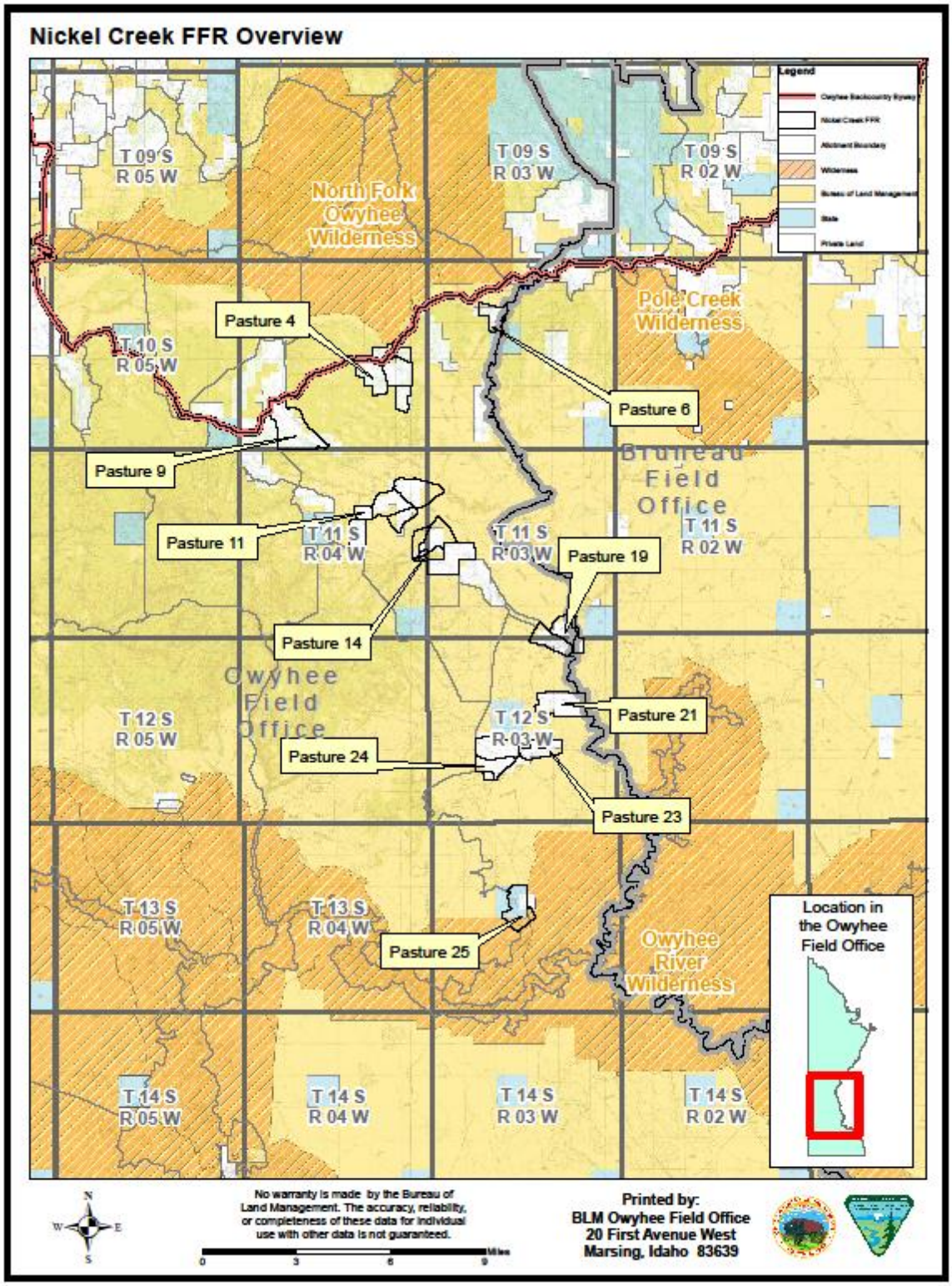

Figure 1.1 - Overview Map

Prior to 2000, the JMGA consisted of about 16 members grazing twice as many cattle in the Nickel Creek FFR allotment than are currently grazed. Deferment of use occurred in some pastures; however many pastures were used season long. Before 2000, the grazing would begin after snow melt and continue until snow fall.

Since 2000, the membership within the JMGA has dropped to three members who each graze in different general geographical areas of the allotment (Figures 1.2, 1.3, and 1.4). This is done to keep each member's livestock separate, to help with livestock husbandry, and to facilitate the orderly use of the Nickel Creek FFR and the adjacent Nickel Creek Allotment. Because the Nickel Creek FFR is managed in conjunction with the Nickel Creek allotment, pasture numbering coincides with numbering in the larger Nickel Creek allotment. Generally, livestock use starts in the Nickel Creek FFR Allotment, and then the majority of cattle move into the Nickel Creek Allotment. Those cattle that stay on the Nickel Creek FFR Allotment are rotated thorough the individual fields. Current grazing practices consider variations in temperature, elevation, and precipitation across the area. In most years, precipitation is greater near the Mud Flat Road, and decreases south towards the Owyhee River. Within private lands in the Nickel FFR Allotment, corrals, holding pastures, irrigation water, and other infrastructure facilitate this grazing system. These facilities are located at the Star, Boni, and Brace Ranches.

An application, from the JMGA, for renewal of this grazing permit was received by BLM on 1/13/2011. Following discussion with the BLM, the permittee provided an updated application, received on 8/2/2012.

During public scoping, JMGA provided corrections regarding fence locations, and acreages of private, BLM, and Idaho state lands within the allotment. Based on this information, fence locations were corrected using information provided and confirmed through field checks by BLM staff (2011 inventory). These changes are represented in Table 1.1 and Table 1.2, and Figures 1.2, 1.3, and 1.4.

Table 1.1 - Allotment Acres

Timeframe	BLM Acres	Private Acres	State Acres	Total Acres*:
Historical (Based on ORMP)	1,661	6,177	326	8,163
Updated as of 2011 Inventory	1,939	7,548	323	9,808

*Acreage based on GIS calculations; some rounding error may exist.

Table 1.2 - Land ownership by Field based on 2011 inventory

Pasture	Field*	BLM Acres	Private Acres	State Acres	Total Acres**
6		49	279	7	335
4	1	0	126	0	126
	2	83	224	0	307
	3	7	479	0	486
	4	34	435	0	469
	5	8	208	0	216

Pasture	Field*	BLM Acres	Private Acres	State Acres	Total Acres**
9		119	911	0	1030
11	1	256	355	0	611
	2	120	353	0	473
	3	77	163	0	240
	4	17	135	0	152
	5	26	321	0	347
14	1	210	240	0	450
	2	156	34	0	190
	3	0	26	0	26
	4	6	7	0	13
	5	12	13	0	25
	6	78	36	0	114
	7	9	632	0	641
19	1	106	317	0	423
	2	181	308	0	489
21		98	635	0	733
23		51	331	0	382
24	1	1	547	0	548
	2	42	292	0	334
	3	0	56	0	56
25		191	85	316	592
Total		**1,937**	**7,548**	**323**	**9,808**

*Fields are smaller fenced areas within the individual pastures.

**Acreage based on GIS calculations; some rounding error may exist.

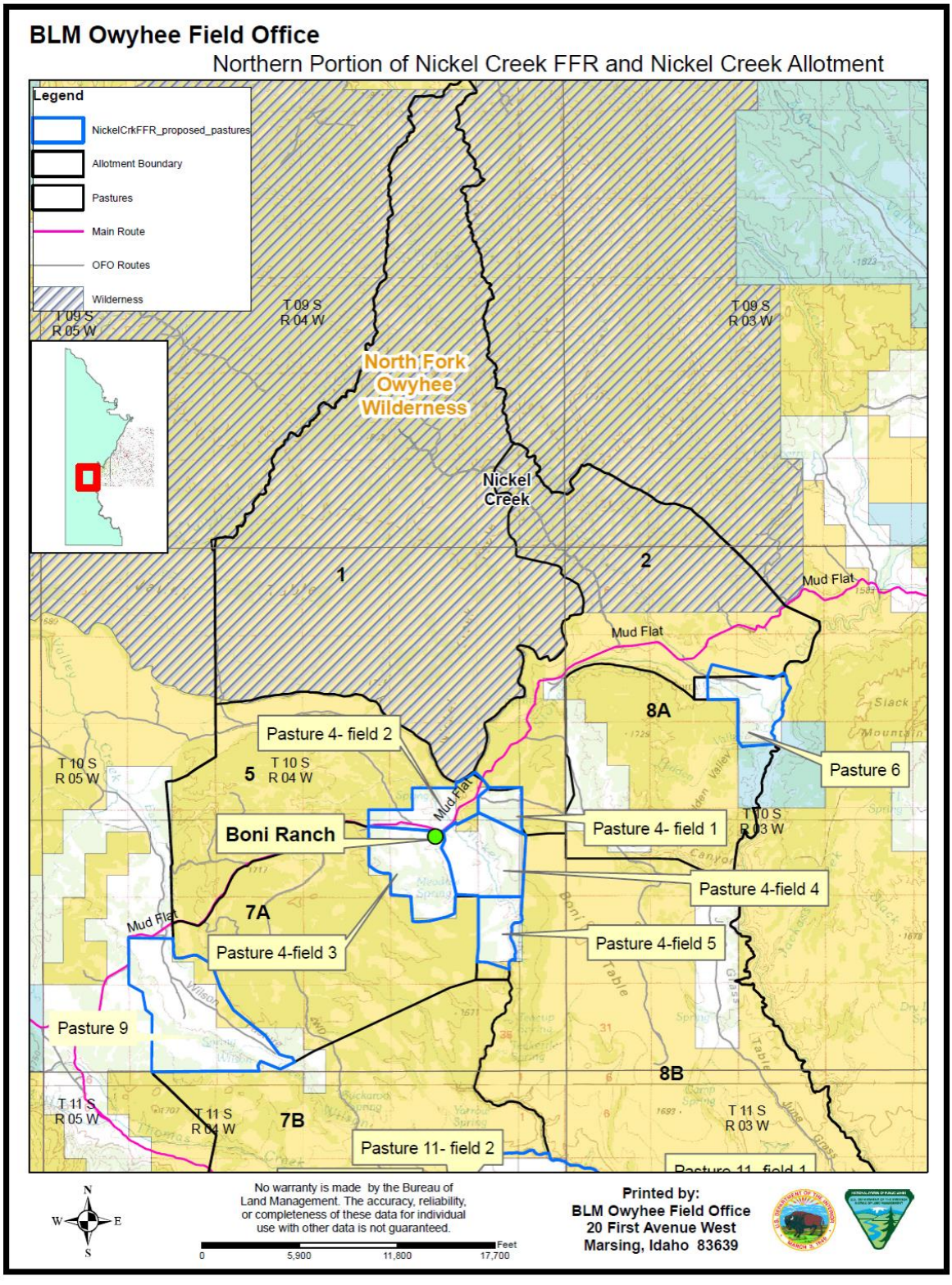

Figure 1.2 - Map of the Northern portion of Nickel Creek FFR Allotment

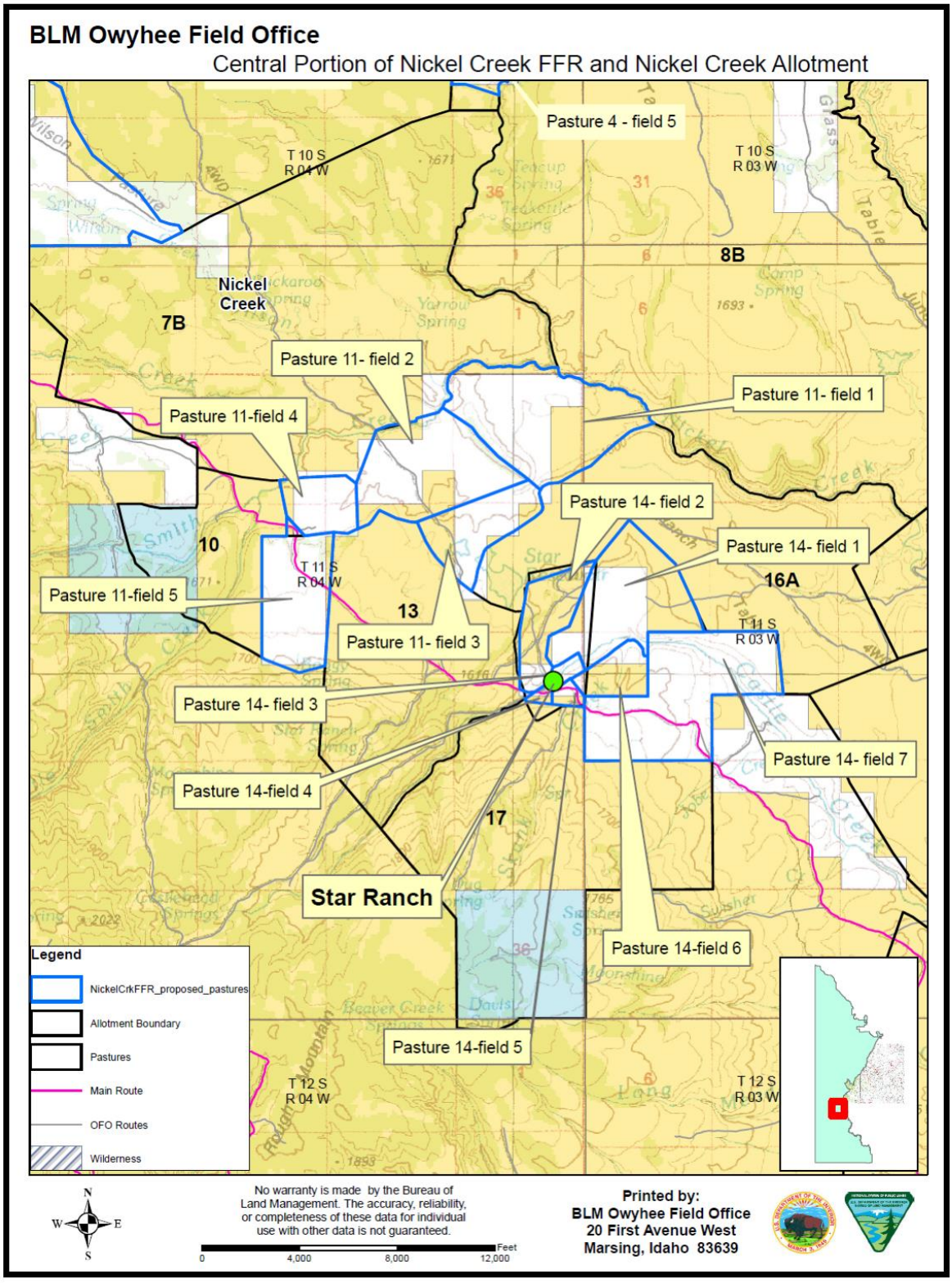

Figure 1.3 - Map of central portion of Nickel Creek FFR Allotment

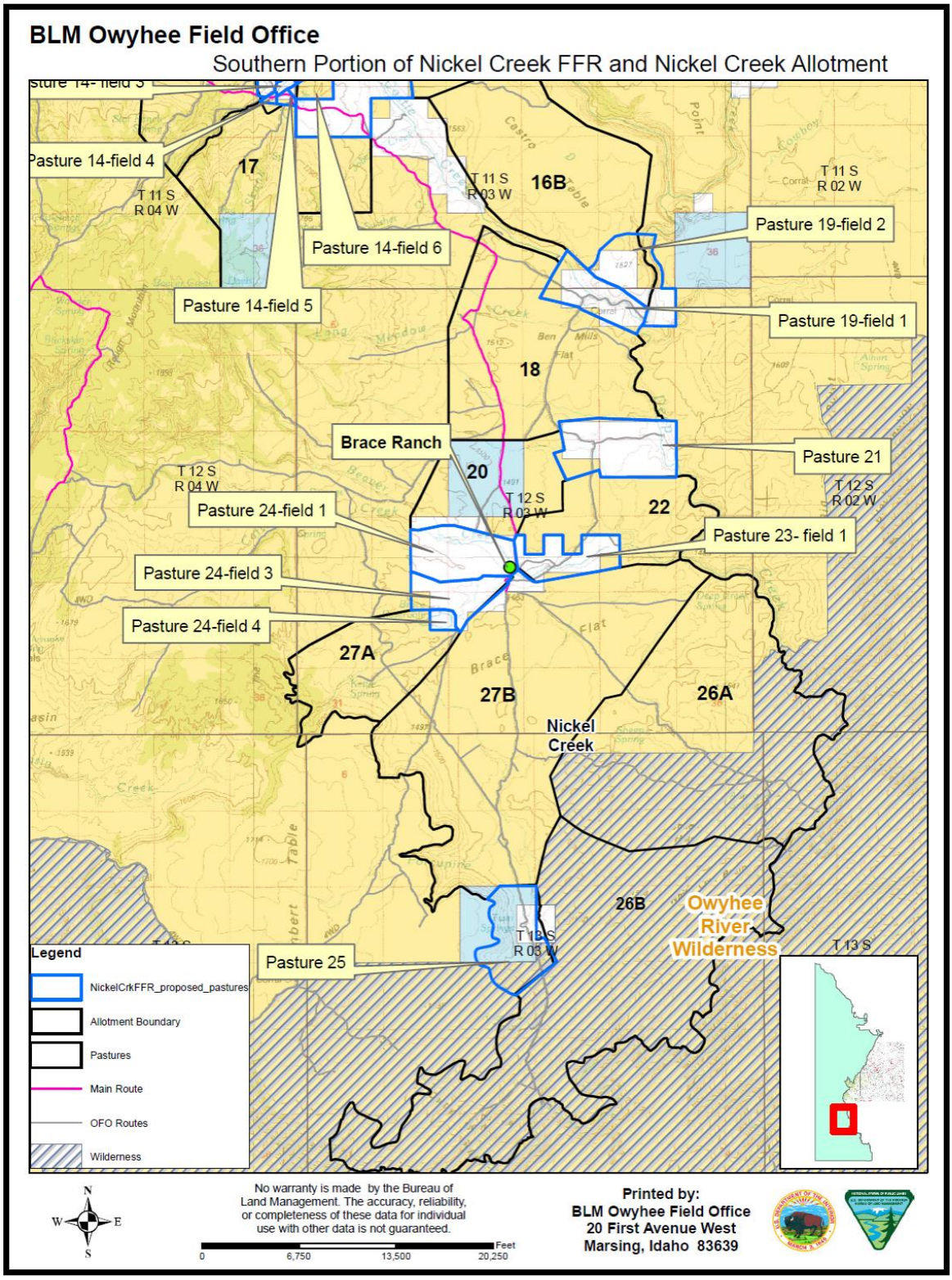

Figure 1.4 - Map of Southern portion of Nickel Creek FFR Allotment

1.1 Need for and Purpose of Action

This proposal responds to an application for renewal of an expiring grazing permit in accordance with the Federal Land Policy and Management Act (FLPMA), Taylor Grazing Act, Fundamentals of Rangeland Health (43 CFR §4180), and the ORMP. The purpose of this action is to determine what level of livestock grazing should be authorized on BLM lands within the Nickel Creek FFR Allotment while meeting management objectives, including the Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management and objectives in the ORMP. In addition, this EA responds to the 2009 order by the Honorable B. Lynn Winmill, Chief District Judge, U.S District Court, that a new decision be completed for the Nickel Creek FFR Allotment.

The action is needed here and now because:

- The ORMP identifies the Nickel Creek FFR Allotment as available for domestic livestock grazing. Where consistent with the goals and objectives of the ORMP, which are presented in section 1.3 below, and Idaho's Standards and Guidelines for Grazing Management (1997), it is BLM policy to authorize forage for livestock grazing to qualified applicants.
- The ORMP classified the Nickel Creek FFR Allotment as an Improve management category allotment. The objective of this classification is to improve the current unsatisfactory resource conditions. (ORMP p. 107)
- The ORMP and Final Environmental Impact Statement (FEIS) identified the following resource concerns on the Nickel Creek FFR Allotment (FEIS A-78):
    - Ecological condition may be unsatisfactory
    - Noxious weeds present
    - Perennial surface water present
    - Crucial big game winter habitats present (mule deer).
    - Special status species present (bighorn sheep, plant, redband trout, sage-grouse)
- In 2013, the Nickel Creek FFR Allotment was evaluated to determine whether the allotment was in conformance with the Idaho Standards for Rangeland Health (Appendix A). It was determined that:
    - Standards 2 (Riparian Areas and Wetlands), 3 (Stream Channel/Floodplain), 7 (Water Quality), and 8 (Special Status Riparian Wildlife) are not being met, but the allotment is making significant progress towards meeting those Standards.
    - Standards 1 (Watershed), 4 (Native Plant Communities), and 8 (Special Status Upland Wildlife) are not being met and current livestock grazing is not a causal factor. The causal factor for not meeting the standard is historical livestock grazing.
    - Standard 8 (Special Status Plants) is being met.
    - The grazing management is in conformance with Idaho Guidelines for Livestock Grazing Management.

Current resource conditions resulting from management changes implemented in 2004 were evaluated using interdisciplinary team field visits in 2011, 2011/2012 utilization data, 2011 riparian monitoring, and 2012 sage-grouse habitat assessments as well as earlier information.

1.2 Decision to be Made

The BLM Authorized Officer will decide whether to renew or not to renew permitted grazing on BLM lands within the Nickel Creek FFR Allotment with suitable terms and conditions. The BLM Authorized Officer will consider the following factors when making the final decision:

- The degree to which the alternative actions meet the purpose and need and project objectives.
- The degree to which the alternative actions address the ORMP management objectives and the issues identified in this analysis.

1.3 Conformance with Applicable Land Use Plan

The ORMP guides public land management, including the grazing management program for the OFO. The alternatives were developed in conformance with the ORMP, as required by 43 CFR § §1610.5-3(a). Relevant objectives and goals from the ORMP are summarized below:

- Provide for a sustained level of livestock use compatible with meeting other resource objectives (LVST1: ORMP p. 23).
- Improve unsatisfactory or maintain satisfactory watershed and vegetative health conditions (SOIL1: ORMP p. 9; VEGE1: ORMP p. 12).
- Meet or exceed water quality standards (WATR1: ORMP p. 11).
- Maintain or improve riparian and wetland areas to attain proper functioning conditions, and perennial streams to support native fish (RIPN1: ORMP p. 13; FISH1: ORMP p. 18).
- Maintain or enhance plant community structure and condition to support wildlife (WDLF1: ORMP p. 15).
- Manage special status species and habitats so their existence is not threatened and there is no need for listing under the Endangered Species Act (SPSS1: ORMP p. 20).
- Protect known cultural resource values from loss until their significance is determined; protect/conserve significant cultural resource sites and values (CULT1 and CULT2: ORMP p. 44-45).

1.4 Relationship to Statutes, Regulations, and Other Requirements

This document is prepared pursuant to Federal law, court orders, collaborative plans, and BLM guidance.

On August 12, 1997, the Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management were approved by the Secretary of the Interior. Livestock management practices must be in conformance with the approved standards and guidelines (USDI-BLM 1997).

Statutes

The BLM OFO is required to comply with all relevant acts, including NEPA, Clean Water Act, Clean Air Act, Migratory Bird Treaty Act, FLPMA, Bald and Golden Eagle Protection Act, Paleontological Resources Preservation Act (PRPA; Public Law 111-11, Title IV, Subtitle D), and the Code of Federal Regulations in 43 CFR §4100.

In addition to the above acts, the National Historic Preservation Act of 1966, as amended, and the Native American Graves Protection and Repatriation Act are pertinent to this Proposed

Action. Southwest Idaho is the homeland of two culturally and linguistically related tribes: the Northern Shoshone and the Northern Paiute. In the latter half of the 19th century, reservations were established at Duck Valley on the Nevada/Idaho border west of the Bruneau River and on the headwaters of the Owyhee River. The Bureau of Land Management (BLM) is required to consult with Native American tribes to "help assure (1) that federally recognized tribal governments and Native American individuals, whose traditional uses of public land might be affected by a proposed BLM action, will have sufficient opportunity to contribute to the decision and (2) that the decision maker will give tribal concerns proper consideration" (U.S. Department of the Interior, BLM Manual Handbook H-8120-1). Tribal coordination and consultation responsibilities are implemented under laws and executive orders that are specific to cultural resources which are referred to as "cultural resource authorities," and under regulations that are not specific which are termed "general authorities." Cultural resource authorities include: the National Historic Preservation Act of 1966, as amended (NHPA); the Archaeological Resources Protection Act of 1979 (ARPA); and the Native American Graves Protection and Repatriation Act of 1990, as amended (NAGPRA). General authorities include: the American Indian Religious Freedom Act of 1979 (AIRFA); the National Environmental Policy Act of 1969 (NEPA); the Federal Land Policy and Management Act of 1976 (FLPMA); and Executive Order 13007-Indian Sacred Sites.

Collaborative Habitat Management Plans

The purpose and need for the action is also consistent with objectives and management actions for the following wildlife habitat conservation plans developed cooperatively by diverse groups of agency, conservation, and sportsmen interests.

- Coordinated Implementation Plan for Bird Conservation in Idaho
- Idaho Comprehensive Wildlife Conservation Strategy 2005
- Idaho Sage-Grouse Conservation Strategy 2006
- North American Bird Conservation Initiative
- North American Mule Deer Conservation Plan

1.5 Scoping and Development of Issues

In 2011 and 2012, three meetings were held with the JMGA to discuss allotment conditions, objectives, and livestock management. On March 11, 2011, the Owyhee Field Manager issued the Scoping Document for this EA for a 30-day comment and review to all affected grazing permittees, interested publics, and State and local governments. The scoping document was also presented to the Shoshone-Paiute Tribe and Owyhee County Commissioners.

Other persons and agencies consulted and contacted include; Chris Reighn of the US Fish and Wildlife Service (USFWS) regarding spotted frog survey, and the Natural Resource Conservation Service (NRCS) office in Marsing, Idaho.

Comments were received from JMGA, Idaho Department of Fish and Game (IDFG), and Western Watersheds Project (WWP) and were considered in the development of the alternatives. See Appendix B for a summary of all comments received, and how they were addressed. The primary issues raised through scoping and brought forward for analysis include the following:

- The potential for livestock grazing in the Nickel Creek FFR Allotment to:
    - affect climate change;
    - promote the spread of weeds on public lands;
    - reduce cover and health of microbiotic crusts;
    - reduce general habitat requirements for wildlife;
    - reduce native plant community and watershed health by reducing large bunchgrasses.
- The appropriateness of the current AUM level based on utilization level.

On August 16, 2013, the Draft Nickel Creek FFR Environmental Assessment was issued for a 30-day review period. Comments were received from the Juniper Mountain Grazing Association, WWP, Idaho native Plant Society, Idaho Department of Agriculture (ISDA), Owyhee Cattlemen's Association and Owyhee County Farm Bureau. Comments were considered and incorporated into the Final EA or were addressed individually. See Appendix E for responses to comments.

Socioeconomics and FFR allotments

Given the percentage of private land in this allotment and the number of available AUMs it is unlikely that the selection of any alternative will have any significant impacts to the economic condition of the counties or communities applicable to this analysis. The difference in effects between alternatives is so minimal that it would not be relevant to an informed decision. While the BLM recognizes that there may some impacts to the permittee, which are discussed and considered in Section 3.5 Grazing Management, the impacts to the socioeconomics in Owyhee and Malheur counties are not discussed further in this document.

Recreation and Paleontological Resources

Initial analyses completed prior to the development of this document indicated that, similar to Socioeconomics, there would be very little difference between the effects of the alternatives and would not be relevant to informing a decision. Therefore, recreation and paleontological resources were not included in this complete analysis.

Climate Change

The science on predicting future climate conditions is continuously evolving. Land management actions might contribute to changes in atmospheric greenhouse gas levels, which can affect global climate. Addressing effects on greenhouse gas (GHG) levels within the scope of NEPA is difficult due to the lack of explicit regulatory guidance on how to meaningfully apply existing NEPA regulations to this evolving issue, and due to the continuously evolving science available at varying levels.

Agencies apply the rule of reason to ensure that their discussion pertains to the issues that deserve study and de-emphasizes issues that are less useful to the decision regarding the proposal, its alternatives, and mitigation options (40 CFR 1500.4(f), (g), 1501.7, 1508.25). In addressing GHG emissions, the BLM ensures that such description is commensurate with the importance of the GHG emissions of the proposed action, avoiding useless bulk and boilerplate documentation, so that the NEPA document may concentrate attention on important issues (40 CFR 1502.5, 1502.24).

The BLM's 2008 NEPA Handbook, H-1790-1, explains that a topic must have a cause-and-effect relationship with the proposed action or alternatives to be considered an issue (H-1790-1, p. 40).

Climate change does not have a clear cause-and effect-relationship with the proposed action or alternatives. It is currently beyond the scope of existing science to identify a specific source of greenhouse gas emissions or sequestration and designate it as the cause of specific climate or resource impacts at a specific location.

The proposed action and alternatives, when implemented, would not have a clear, measurable cause-and-effect relationship to climate change because the available science cannot identify a specific source of greenhouse gas emissions such as those from livestock grazing and tie it to a specific amount or type of changes in climate.

Therefore, the effects of livestock grazing to the global climate will not be analyzed in detail in this EA.

1.5.1 Evaluation and Determination

The 2013 Determination found that the Nickel Creek FFR Allotment was not meeting Standard 1 (Watersheds), and current livestock grazing management practices are not significant factors. Standard 1 is not being met as indicated by the evidence of accelerated soil erosion, and imbalance of increaser to decreaser plant species, and to a lesser extent, the increase in western juniper. Based on 2011 field evaluation of indicators and utilization data, plant vigor was not adversely affected by current grazing management practices, and would be maintained under the same management. Maintaining plant vigor would help the soils rebuild over time to correct losses attributed to historic livestock grazing management practices.

Standards 2 and 3(Riparian Areas and Wetlands and Stream Channel/Floodplain) are not being met, but are making significant progress. These standards are not being met as indicated by deeply entrenched channels, increased width-to-depth ratio and excessive bedload (sediment). Significant progress is indicated by herbaceous riparian vegetation that appears to be re-stabilizing streambanks.

The Nickel Creek FFR Allotment is not meeting Standard 4 (Native Plant Communities), and current livestock grazing management practices are not significant causal factors. There has been a moderate reduction in large perennial bunchgrasses and biological soil crust and an increase in non-native annual grasses and some encroachment of western juniper. The causal factors for not meeting this standard are historical grazing and invasive plants. Current grazing practices are adequate for maintaining the current density of large bunchgrasses.

Standards 5 (Seedings) and 6 (Exotic Plant Communities) do not apply to this allotment.

The Nickel Creek FFR Allotment is not meeting Standard 7 (Water Quality), but is making significant progress. The standard is not being due to non-attainment of Idaho water quality standards as a result of deeply entrenched channels, increased width to depth ratios, excessive

sediment, and increasing temperature. Current livestock grazing management practices are contributing to significant progress as indicated by the increased presence of herbaceous riparian vegetation, which is stabilizing streambanks; however only the young age classes of willows were observed.

The allotment is meeting Standard 8 (Threatened and Endangered Species) for special status plants due to light livestock use and improving conditions. It is not being met for special status animals in either the uplands or riparian areas; however, current livestock grazing management practices are not significant causal factors. Improvements to rangeland health under Standards 2, 3 and 4 have led to this determination.

Historic grazing is generally the significant causal factor for not meeting the standards in the Nickel Creek Allotment FFR. Changes from historic grazing (a combination in changes in grazing management, changes within JMGA, and improvements on private lands) reduced grazing pressure on public lands within the allotment. Management changes in the adjacent Nickel Creek Allotment also affected how the Nickel Creek FFR was run (incorporating periodic rest and deferment of use until after seed ripe), as did the Terms and Conditions imposed by United States District Court for the District of Idaho in February 2000.

2.0 Alternatives

2.1 Alternative Development Process

To address issues identified on BLM lands in the 2013 Nickel Creek FFR Allotment Evaluation and Determination the Owyhee Field Office interdisciplinary team (ID Team) has developed four alternatives to determine what level of livestock grazing would be permitted in the Nickel Creek FFR Allotment, as follows.

Alternative A - Under Alternative A, the BLM would renew the JMGA permit for 10 years consistent with recent livestock grazing management practices (Table 2.3 in the EA) that were put in place since about 2003. The new permit would define a season of use from April 1 to November 20 and authorize 109 AUMs of livestock use. The new grazing permit would allow livestock numbers to vary, however the specified season, maximum duration, frequency for each pasture or field could not be adjusted. Terms and conditions for riparian stubble height, herbaceous riparian and woody browse utilization, and stream bank alteration applied to the grazing permit by the United States District Court for the District of Idaho would continue. The following terms and conditions would apply:

1. Key herbaceous riparian vegetation, where streambank stability is dependent upon it, will have a minimum stubble height of 4 inches on the streambank, along the greenline, after the growing season.
2. Key riparian browse vegetation will not be used more than 50% of the current annual twig growth that is within reach of the animals.
3. Key herbaceous riparian vegetation on riparian areas, other than the streambanks, will not be grazed more than 50% during the growing season, or 60% during the dormant season; and

4. Streambank damage attributed to grazing livestock will be less than 10% on a stream segment.

Under this grazing prescription, the allotment is not meeting standards but current livestock grazing is not the casual factor and resource conditions should maintain their current condition with some improvement, though the speed of improvement to specific resources may vary.

Alternative B - The BLM would renew the permit to JMGA with modification of the existing permit.

This alternative would renew the permit to the JMGA for 10 years and would authorize grazing on the Nickel Creek FFR allotment the same as the current permit without including the four specific terms and conditions identified in Alternative A. This alternative would authorize livestock numbers and season of use at the JMGA discretion as long as 109 AUMs were not exceeded. The permit would authorize yearlong grazing.

In order to meet or make significant progress toward meeting Standards and ORMP objectives, the terms and conditions listed below would be included. Exceeding any term and condition would result in complete rest from livestock grazing within that pasture or field the following year. JMGA would monitor BLM lands for these measures annually and submit information to BLM. Monitoring would be completed as outlined in Appendix H.

This alternative would include the following terms and conditions specific to this alternative.

1. Livestock utilization is limited to no more than 40% of key upland herbaceous forage species.
2. Livestock utilization is limited to no more than 25% of the current year's growth of woody riparian browse species.
3. A residual riparian stubble height of no less than 4 inches at the end of the growing or use period (whichever is later) is required.

Under this alternative resource conditions are expected to be maintained in their current condition with some improvement over the long-term; however, improvement will be similar or take longer than Alternative A.

Alternative C- This alternative proposes no issuance of a grazing permit and would result in no grazing during the 10-year term of the permit.

Alternative D - Under Alternative D, the BLM would renew the permit with an objective to enhance upland habitat by providing more resource constraints compared to Alternative A or B while still ensuring the allotment meets or makes significant progress to meeting standards. The BLM would accomplish this by limiting the duration of use in any one field or pasture to no more than 30 days per year. This alternative would also include a reduced upland utilization level in the spring and an increase in stubble height for riparian vegetation. The BLM would permit 109 AUMs on BLM land from April 1 to November 20. The permittee would be responsible to follow the grazing system outlined in Table 2.3 of the EA, but with the modifications described below.

This alternative would include the following terms and conditions specific to this alternative.

1. Livestock utilization is limited to no more than 30% of key upland herbaceous forage species 4/1 to 7/1. Utilization is limited to not more than 40% the remainder of the grazing season.
2. Season of use is limited to 9/15 to 11/20, residual riparian stubble height is limited to 6 inches at the end of the grazing season, and riparian woody browse utilization is limited to 25% at the end of the grazing season (11/20) in the following pastures:
    a. Pasture 6
    b. Pasture 11 – Field 2
    c. Pasture 14 – Fields 2 and 6
    d. Pasture 19 – Field 1

This alternative is expected to maintain resource conditions in their current condition in the short term, with a potential for faster improvement over the long term compared to Alternatives A and B.

2.2 Alternatives Considered But Not Analyzed in Detail

1. The BLM considered excluding livestock grazing in Castle Creek by fencing a reach that was determined not to be meeting riparian standards in 2003. However, based on a 2011 field assessment, that reach of Castle Creek is now making significant progress towards meeting riparian standards due to better grazing management practices. Additionally, the BLM determined that this fencing project would have a sage-grouse fence collision risk due to its proximity to active sage-grouse leks; consequently, the fencing project was not brought forward for further analysis.

2. Some concern and opinion was expressed, through internal and external scoping, that the BLM lands within the allotment boundary could be better managed if incorporated with the greater Nickel Creek Allotment. Therefore, the BLM developed a proposal to fence BLM lands in the Nickel Creek FFR Allotment into the Nickel Creek Allotment. This alternative was not brought forward for further analysis because mitigation for known and anticipated cultural and paleontological sites from vehicle and human traffic while building the fences would be impractical and infeasible.

3. The current permit (use at permittee's discretion, plus the four riparian terms and conditions listed in Alternative A) was not separately analyzed in detail because its components are included in alternatives that were analyzed in detail. Use at the permittee's discretion is analyzed in Alternative B, and management as it has been recently, including the four riparian terms and conditions, is analyzed in Alternative A. This document analyzes what issues arose from recent management (Alternative A - current situation/continuation of current grazing practices). Analyzing the current permit would not provide for a baseline for further comparison and analysis.

4. JMGA submitted an application that is the same as the current permit except absent the four terms and conditions as analyzed in the current situation alternative. The JMGA

application was not considered for analysis because it would not meet Standards. Specifically this alternative would not meet riparian, upland vegetation, and wildlife Standards because this permit would allow for 12 months of grazing with no restrictions to minimize effects to riparian areas or upland vegetation.

Specifically, season-long with no restriction on intensity of use would not allow riparian vegetation (willow and sedges) along Castle and Willow Creeks, in Pastures 11 Field 2 and Pasture 19 Field 1, to meet their potential because if cattle are left in the pasture after spring grazing they will congregate in the riparian zones during the hot summer. Overuse of riparian vegetation is expected to occur due to reduction in forage and the shift in grazing use to young willows (Kovalchik & Elmore, 1991). Over time, the willows along Castle and Smith Creeks would be reduced or lost. As the health of riparian areas decreased so would the wildlife that use this area. The effects of season-long grazing to upland vegetation in all pastures would result in slow decline in deep-rooted bunchgrasses and forbs without a restriction on intensity of use. As intensity increases due to repeated grazing, heavy use (61-80) is expected. Over time the vigor and productivity is expected to decline at this level of use. It is expected that forbs would be lost or replaced first due the location of the plant growing points and then grasses would be lost next. This process would occur slowly but if left unchecked the deep-rooted vegetation and forbs would be replaced with a new ecological site comprised of sagebrush and invasive grasses like cheatgrass or bulbous bluegrass within 20-30 years.

5. Area of Critical Environmental Concern (ACEC). This alternative, proposed by WWP, was determined to be outside the scope of this EA. Section 202(c) of FLPMA (43 U.S.C.1712) requires that in developing land use plans (or amending existing plans), the BLM must give priority to designating and protecting areas of critical environmental concern (ACECs). Designation of a new ACEC is a land use planning-level decision that would require an amendment to the existing Owyhee RMP. The BLM is not in the position to include an ORMP amendment in this permit renewal process. Grazing authorization renewal is an implementation-level decision that does not involve changes to an RMP.

6. Alternative Actions to Conserve, Enhance and Restore Natural Vegetation Communities, Watersheds and Native Species. This alternative was proposed during the comment period by WWP. In summary, the proposal requests restricted standards be established, such as “9 inches of residual grass cover across understory communities at all times”, limiting cattle trampling to less than 5% of the area of a square meter monitored, 6 inches of stubble height on all riparian/meadow area herbaceous species at all times, riparian shrub browse and/or breakage limited to 5% of livestock-accessible new growth and no livestock grazing on areas that are restored. Removal of range improvements in areas that have been closed to livestock grazing, seeding of disturbed areas using local native plant ecotype seeds and seedlings are also recommended. Active and passive restoration actions are discussed that allow restoration of native vegetative communities and watersheds.

This proposal appears to address an area much larger than the Nickel Creek FFR Allotment. The restrictions that it proposes would essentially eliminate livestock grazing from the allotment, as is indicated throughout the proposal. The extensive monitoring proposed for livestock grazing could not be supported based on current budget and personnel restrictions, thereby eliminating grazing from the allotment. When restrictions associated with livestock grazing are removed, this proposal closely resembles Alternative C - No Grazing, which is described in Section 2.4.3 and analyzed in detail in Sections 3.0 and 4.0.

2.3 Management Actions Common to All Alternatives

Monitoring
Monitoring studies by the BLM would be conducted during the term of the grazing permit in accordance with guidance provided by the Idaho State Office Instructional Memorandum IM ID-2008-002: Monitoring Strategies for Rangelands. Monitoring studies during the term of permit would include but are not limited to upland utilization, browse utilization, photo plots, multiple indicator monitoring (MIM), stubble height measurement, bank alteration, riparian woody browse utilization, and water quality testing.

2.4 Description of Alternatives

2.4.1 Alternative A – Current Situation/Continuation of Recent Grazing Practices

Under Alternative A, the BLM would renew the JMGA permit for 10 years consistent with recent livestock grazing management practices, as defined in the following tables, which led to the current situation on the ground. Based on meetings with the JMGA livestock numbers have varied however, the season of use, duration and frequency has occurred as described in Table 2.3.

Based on this information the new permit would define a season of use from April 1 to November 20 and authorize livestock use. The new grazing permit would allow livestock numbers to vary, however the specified season, maximum duration, frequency for each pasture or field could not be adjusted. The permit would authorize 109 AUMs. Terms and conditions for riparian stubble height, herbaceous riparian and woody browse utilization, and stream bank alteration applied to the grazing permit by the United States District Court for the District of Idaho would continue.

Terms and Conditions of Alternative A:

Table 2.1 – Permitted grazing use within the Nickel Creek FFR Allotment

Permittee	Allotment	Active Use (AUMs*)	Suspension (AUMs)	Permitted Use (AUMs)
Juniper Mountain Grazing Association	Nickel Creek FFR (00657)	109	0	109

*AUM=animal unit month - the amount of forage needed to sustain one cow and calf for one month

Table 2.2 - Mandatory Terms and Conditions Associated with Alternative A

Allotment Name and Number	Pasture	Livestock Number**	Livestock Kind	Season of Use**	Percent Federal Land	Active AUMs
Nickel Creek FFR (00657)	4, 6, 9, 11, 14, 19, 21, 23, 24, 25	107	Cattle	4/1-11/20	100	109

** See Terms and Conditions #1-2 for clarification of livestock number and season of use.

Other Terms and Conditions:

1. Grazing use will be in accordance with the grazing schedule identified in the final decision dated_____.
2. The number of livestock on the Nickel Creek FFR Allotment #00657 is at the permittee's discretion.
3. Livestock turnout dates are subject to District Range Readiness Criteria.
4. A properly completed, signed, and dated actual grazing use report form (BLM Form 4130-5) must be submitted to BLM, OFO within 15 days from the last day of authorized annual grazing use.
5. Supplemental feeding is limited to salt, mineral, and/or energy/ protein in block, granular, or liquid form. If used, these supplements must be placed at least one-quarter (1/4) mile away from any riparian area, spring, stream, meadow, aspen stand, sensitive plant species, playa, or water development. Exemption to this must be approved by the Authorized Officer.
6. Pursuant to 43 CFR §10.4(b), the BLM Owyhee Field Manager must be notified by telephone with written confirmation immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined in 43 CFR §10.2) on federal lands. Pursuant to 43 CFR §10.4(c), any ongoing activities connected with such discovery must be stopped immediately and a reasonable effort to protect the discovered remains or objects must be made.
7. Rangeland improvements must be maintained in accordance with all cooperative agreements and range improvement permits.

Terms and Conditions implemented by United States District Court for the District of Idaho

8. Key herbaceous riparian vegetation, where streambank stability is dependent upon it, will have a minimum stubble height of 4 inches on the streambank, along the greenline, after the growing season;
9. Key riparian browse vegetation will not be used more than 50% of the current annual twig growth that is within reach of the animals.
10. Key herbaceous riparian vegetation on riparian areas, other than the streambanks, will not be grazed more than 50% during the growing season, or 60% during the dormant season.
11. Streambank damage attributable to grazing livestock will be less than 10% on a stream segment.

Table 2.3 - Grazing Schedule based on current management

Pasture	Field	Est. number of cattle on all lands in the pasture or field	Season	Duration	Frequency of use	BLM Acres and % of BLM land in pasture	Non-BLM acres
4	3, 4, 5	150 cattle rotated between pasture 4 fields 3, 4 and 5, and pasture 6 field 1	5/15-11/1	Up to 45 days in each field for a total duration of 171 days	Fields would be grazed only once per grazing season	98 acres 7% BLM land	1,408
6	1						
4	1, 2	300 cattle in both fields	4/1-5/1 10/1-11/15	Up to 14 days in both fields combined	Fields would be grazed only once per grazing season	83 acres 19% BLM land	350
9	1	175 cattle	4/1-5/1 and 10/1-11/15	Up to 10 days in the spring and 21 days in the fall	Field would be grazed twice per grazing season	119 acres 12% BLM land	911
11	1	80 cattle	4/1-5/15	Up to 40 days	Field would be grazed only once per grazing	256 acres 42% BLM land	355
11	2, 4	100 cattle rotated between fields	5/1-11/1	Up to 45 days in each field (90 total days in both fields)	Each field may be grazed multiple times during the grazing season	137 acres 22% BLM land	488

Pasture	Field	Est. number of cattle on all lands in the pasture or field	Season	Duration	Frequency of use	BLM Acres and % of BLM land in pasture	Non-BLM acres
11	5	100 cattle	5/1-11/1 may be grazed in the fall after seed ripe and in the spring	Up to 45 days	Cattle may graze this field multiple times within the grazing season	26 acres 7% BLM land	321
11	3	100 cattle	5/1-11/1	Up to 45 days	Cattle would graze this field multiple times within the grazing season	77 acres 32% BLM land	163
14	1, 4, 5, 6, 7	150 cattle rotated between fields	5/15-11/1	Up to 45 days in each field with a total duration of 171 days	Fields would be grazed only once per grazing season	315 acres 25% BLM land	928
14	2	110 cattle	4/15-5/15	Up to 7 days in spring	Field would be grazed once per grazing season	156 acres 82% BLM land	34
14	3	Private					
19	1, 2	120 cattle rotated between fields	4/1-10/1 After seed ripe/fall most years	Up to 92 days (3 months) in all pastures and fields combined	Fields would be used only once per grazing season	385 acres 23% BLM land	1,260
21	1						

Pasture	Field	Est. number of cattle on all lands in the pasture or field	Season	Duration	Frequency of use	BLM Acres and % of BLM land in pasture	Non-BLM acres
23	1	120 cattle rotated between pasture 23 field 1, pasture 24 field 1 and 3, and pasture 25	4/1-10/1 Generally used when cattle move off the Nickel Creek allotment, and periodically throughout the season	Up to 184 days in all pastures and fields combined	Cattle may graze fields multiple times	285 acres 18% BLM land	1,311
24	1, 3						
25	1						
24	4	private					

2.4.2 Alternative B – Modified JMGA proposal

The BLM would renew the permit to JMGA for 10 years. This alternative would authorize grazing on the Nickel Creek FFR allotment similar to the current permit in order to make the JMGA application meet standards. This alternative would authorize livestock numbers and season of use at the discretion of the JMGA as long as 109 AUMs were not exceeded.

In order to meet rangeland health Standards and ORMP objectives, four terms and conditions would be included to ensure this allotment meets or makes significant progress to meeting Standards. The terms and conditions would limit utilization of key upland and woody browse species, impose stubble height requirements, and require the JMGA to monitor for these terms and conditions. Monitoring would be completed by the JMGA annually and/or BLM periodically. Exceeding any utilization or stubble height limit would result in complete rest from livestock grazing within that pasture or field the following year. Appendix H provides a complete description of the monitoring protocol.

Terms and Conditions of Alternative B:

Table 2.4 - Permitted grazing use within the Nickel Creek FFR allotment

Permittee	Allotment	Active Use (AUMs)	Suspension (AUMs)	Permitted Use (AUMs)
Juniper Mountain Grazing Association	Nickel Creek FFR	109	0	109

Table 2.5 - Mandatory and other Terms and Conditions for Alternative B

Allotment Name and Number	Pasture	Livestock Number	Livestock Kind	Season of Use	Percent Federal Land	AUMs Active
Nickel Creek FFR (00657)	4, 6, 9, 11, 14, 19, 21, 23, 24, and 25	107	Cattle	1/1-12/31	100	109

Other Terms and Conditions:

1. Grazing use will be in accordance with the grazing schedule identified in the final decision dated_____.
2. The number of livestock and season of use on the Nickel Creek FFR Allotment #00657 are at the permittee's discretion.
3. Livestock turnout dates are subject to District Range Readiness Criteria.
4. Livestock utilization is limited to no more than 40% of key upland herbaceous forage species.
5. Livestock utilization is limited to no more than 25% of the current year's growth of woody riparian browse species.
6. A residual riparian stubble height of no less than 4 inches at the end of the growing or use period (whichever is later) is required.
7. Permittee monitoring of Terms and Conditions 4, 5 and 6 will occur annually. Exceeding any one of these terms and conditions will result in complete rest from livestock grazing within that pasture or field the following year.
8. A properly completed, signed and dated actual grazing use report form (BLM Form 4130-5) must be submitted to the BLM, Owyhee Field Office within 15 days from the last day of authorized annual grazing use.
9. Supplemental feeding is limited to salt, mineral, and/or energy/ protein in block, granular, or liquid form. If used, these supplements must be placed at least one-quarter (1/4) mile away from any riparian area, spring, stream, meadow, aspen stand, sensitive plant species, playa, or water development.
10. Rangeland improvements must be maintained in accordance with all cooperative agreements and range improvement permits.
11. Flexibility would be authorized allowing five days to make pasture or field moves.
12. Pursuant to 43 CFR §10.4(b), the BLM Owyhee Field Manager must be notified by telephone with written confirmation immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined in 43 CFR §10.2) on federal lands. Pursuant to 43 CFR §10.4(c), any ongoing activities connected with such discovery must be stopped immediately and a reasonable effort to protect the discovered remains or objects must be made.

2.4.3 Alternative C – No Grazing

Under Alternative C, the BLM would not authorize livestock use to public lands within the Nickel Creek FFR Allotment for the next 10 years. The BLM would deny the application for permit renewal (i.e., not reissue the permit) and not approve any applications, received in that time period, to graze public lands in this allotment. After 10 years, the BLM would reevaluate whether to again authorize grazing on the public lands within the allotment, considering such

factors as wildlife, upland vegetation, and riparian health. The BLM would not cancel the existing preference for grazing use of this allotment's public lands as part of this action and would continue to administer it under applicable law and regulation. After 10 years, the BLM would grant first priority for receipt of a future authorization, if any, to graze public lands within the Nickel Creek FFR allotment to the qualified applicant who holds this preference.

2.4.4 Alternative D - Adjust Current Management to Enhance Resource Values

Alternative D adjusts current management to further enhance resource condition by limiting the duration of use in any one field or pasture to no more than 30 days. The BLM would permit 109 AUMs from April 1 to November 20 with varying livestock numbers as described in Table 2.6 and Table 2.7. The permittee would be responsible to follow the grazing system outlined in Table 2.3, but with the modifications described below. An upland utilization limit of 30% (April 1 to July 1) and 40% for all other seasons would be applied.

In pastures with riparian resources, season of use would be limited to September 15 to November 20 with utilization limits of residual riparian stubble height to no less than 6 inches and riparian woody browse utilization to no more than 25% at the end of the grazing season. These pastures are as follows:

- Pasture 6
- Pasture 11 – Field 2
- Pasture 14 – Fields 2 and 6
- Pasture 19 – Field 1

Terms and Conditions of Alternative D

Table 2.6 - Permitted grazing use within the Nickel Creek FFR allotment

Permittee	Allotment	Active Use (AUMs)	Suspension (AUMs)	Permitted Use (AUMs)
Juniper Mountain Grazing Association	Nickel Creek FFR	109	0	109

Table 2.7 - Mandatory and Term and Conditions for Alternative D

Allotment Name and Number	Pasture	Livestock Number**	Livestock Kind	Season of Use	Percent Federal Land	AUMs Active
Nickel Creek FFR (00657)	4, 6, 9, 11, 14, 19, 21, 23, 24 and 25	14	Cattle	4/1-11/20	100	109

Others Terms and Conditions:

1. Grazing use will be in accordance with the grazing schedule identified, including Table 2.3, in the final decision dated_____.

2. The number of livestock on the Nickel Creek FFR Allotment #00657 are at the permittee's discretion. The season of use, maximum duration, and frequency will not change.
3. Turnout is subject to Boise District Range Readiness Criteria.
4. Livestock utilization is limited to no more than 30% of key upland herbaceous forage species 4/1 to 7/1. Utilization is limited to not more than 40% the remainder of the grazing season.
5. Season of use is limited to 9/15 to 11/20, residual riparian stubble height is limited to 6 inches at the end of the grazing season, and riparian woody browse utilization is limited to 25% at the end of the grazing season (11/20) in the following pastures:
    a. Pasture 6
    b. Pasture 11 – Field 2
    c. Pasture 14 – Fields 2 and 6
    d. Pasture 19 – Field 1
6. Changes to the scheduled grazing use require prior approval from the Authorized Officer.
7. All appropriate documentation regarding base property leases, lands offered for exchange of use, and livestock control agreements must be approved prior to turn-out. Lease of land and/or livestock should be notarized prior to submission and be in compliance with Boise District Policy.
8. Rangeland improvements must be maintained in accordance with all cooperative agreements and range improvement permits.
9. Flexibility would be authorized allowing five days to make pasture or field moves.
10. A properly completed, signed and dated actual grazing use report form (BLM Form 4130-5) must be submitted to BLM, OFO within 15 days from the last day of authorized annual grazing use.
11. Supplemental feeding is limited to salt, mineral, and/or energy/ protein in block, granular, or liquid form. If used, these supplements must be placed at least one-quarter (1/4) mile away from any riparian area, spring, stream, meadow, aspen stand, sensitive plant species, playa, or water development.
12. Pursuant to 43 CFR §10.4(b), the BLM Owyhee Field Manager must be notified by telephone with written confirmation immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined in 43 CFR §10.2) on federal lands. Pursuant to 43 CFR §10.4(c), any ongoing activities connected with such discovery must be stopped immediately and a reasonable effort to protect the discovered remains or objects must be made.

2.5 Comparison of Alternatives

Table 2.8 - Comparison of Alternatives.

	Alternative A	Alternative B	Alternative C	Alternative D
Cattle Number	Permittee Discretion	Permittee Discretion	No Grazing	Permittee Discretion
Overall Season of use	4/1-11/20	Permittee Discretion	N/A	4/1-11/20

	Alternative A	Alternative B	Alternative C	Alternative D
Grazing Rotation	Permittee must follow cattle movements outlined in Table 2.3	No specified rotation	N/A	Permittee must follow cattle movements outlined in Table 2.3
Number of days in each pasture (Duration)	Up to 45 days of grazing in each field or pasture as described in Table 2.3	Undefined	N/A	No more than 30 days of grazing in each field or pasture
Pastures and Fields Seasons of Use	As outlined in Table 2.3	Undefined	N/A	Limit season of use to 9/15-11/20 for: - Pasture 6, - Pasture 11- Field 2 - Pasture 14 - Fields 2, 6 - Pasture 19 - Field 1 All other pastures or fields would stay the same as outline in Table 2.8

	Alternative A	Alternative B	Alternative C	Alternative D
Terms and Conditions	At least 4 inch riparian stubble height, No more than 50% key riparian browse utilization, No more than 50% use of key riparian vegetation during the growing season, or 60% during the dormant season; and Less than 10% streambank damage.	At least 4 inch riparian stubble height, No more than 25% key riparian browse utilization, No more than 40% utilization of key upland herbaceous forage species by livestock.	N/A	At least 6 inch riparian stubble height, No more than 25% key riparian browse utilization, No more than 30% utilization of key upland herbaceous forage species by livestock from 4/1-7/1 and 40% of key upland herbaceous forage species by livestock for all other seasons
Active AUMs	109	109	0	109
Suspended AUMs	0	0	109	0
Total Permitted AUMs	109	109	109	109

3.0 Affected Environment and Environmental Consequences

Methods

Rangeland Health Assessments were used to develop a baseline and comparison of rangeland conditions for the affected area. The project area boundary consists of the 10 pastures within the Nickel Creek FFR allotment (Figures 1.1-1.4). Rangeland health was evaluated for applicable Standards using indicators defined by the Idaho Standards for Rangeland Health (USDI-BLM 1997). The current condition (2013) was compared against field assessments conducted between 2001 and 2011.

An evaluation of rangeland health indicators was completed in 2001 and led to a determination of whether the Nickel Creek FFR Allotment had achieved Standards. Changes in management occurred between about 2001 and 2005 (Section 1.1). In July 2011, the BLM was accompanied by permittee's consultant Chad Gibson to conduct field evaluations of indicators (Pellant et al. 2005) at four different pastures, and made brief visits to two other sites. The BLM completed

utilization monitoring in all pastures by the end of the 2011 season; utilization was also monitored in some pastures in 2012. Additional information used in this analysis includes riparian monitoring (2011) and sage-grouse habitat assessments (2012). The updated assessment of Standards is found in the Affected Environment section of this EA for the applicable resource for each Standard. The following resource analyses combine that information with other tools and observations to evaluate whether current conditions comply with Standards. An updated evaluation and determination document was completed in 2013 (Appendix A). The description of existing conditions defines the baseline for which environmental consequences of the alternatives can be evaluated.

3.1 Upland Vegetation and Noxious and Invasive Weeds

3.1.1 Affected Environment

Ecological Sites

Ecological sites are a description of the expected vegetation based on soils, climate (precipitation and temperature), and natural disturbance regime. The Nickel Creek FFR Allotment is composed of three major ecological sites (Table 3.1 and Figure 3.1). They include a Shallow Claypan low sagebrush/Idaho fescue site, a Loamy mountain big sagebrush/bluebunch wheatgrass-Idaho fescue site, and a Loamy basin big sagebrush/bluebunch wheatgrass site (USDA-NRCS 2005). Appendix C contains a list of the common and scientific names of plant species mentioned in this EA.

Table 3.1 - Ecological Sites Mapped in the Nickel Creek FFR Allotment

Ecological Site	Dominant Species Expected	Acres	Percent of Entire Allotment	Acres (BLM)	Percent of BLM Acres in Allotment
Shallow Claypan 12-16”	Low sagebrush, Sandberg bluegrass, bluebunch wheatgrass	2,922	30%	893	46%
Loamy 13-16”	Mountain big sagebrush, bluebunch wheatgrass, Idaho fescue	3,779	39%	581	30%
Loamy 11-13”	Basin big sagebrush, bluebunch wheatgrass	1,674	17%	278	14%
Six Others	Various	1,435	Each <5%	187	Each <5%
Total:		**9,810**	**100%**	**1,939**	**100%**

The ecological sites show that under natural disturbance regime, the Nickel Creek FFR Allotment should be dominated by sagebrush/bunchgrass communities. Other vegetation types such as western juniper, rabbitbrush, wet meadows, and riparian areas are expected to occur as unmapped inclusions within the larger ecological sites, and each should make up only a small percentage of the area.

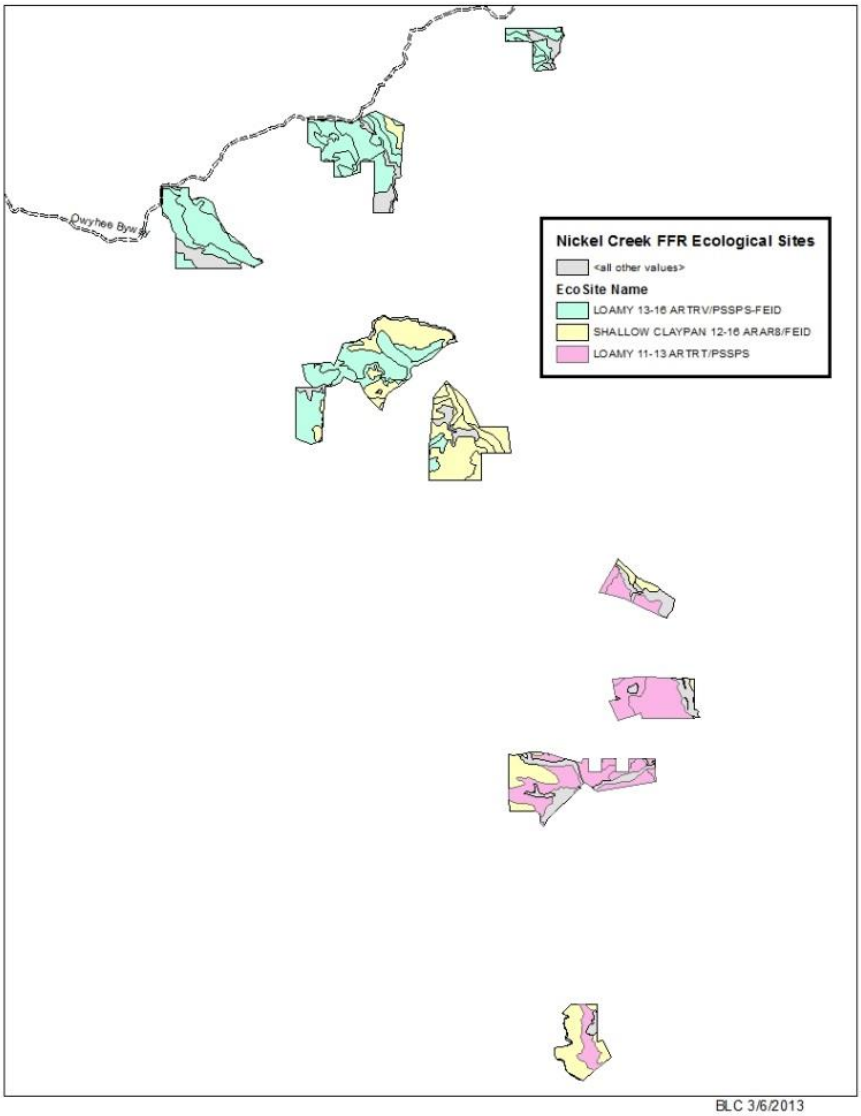

Figure 3.1 - Ecological Sites in the Nickel Creek FFR Allotment

3.1.1.1 Current Vegetation

Current vegetation[1] is discussed at two scales: cover type (overstory vegetation) and understory species composition. Current overstory vegetation is shown by mapping done by the Pacific Northwest National Laboratory (PNNL) from 2000/2001 Landsat satellite imagery (the most recent vegetation mapping available at this scale). The PNNL information is summarized by percentages in Table 3.2.

[1] Note that these data (specifically indicators) are primarily qualitative rather than quantitative, and ecological site descriptions do not include specific figures for some important elements (such as biological soil crust cover), so the following discussion uses non-numerical comparative terms.

Table 3.2 - Existing Overstory Vegetation in the Nickel Creek FFR Allotment (based on PNNL data)

Vegetation Cover Type	Percent of entire allotment	Percent of BLM land in Allotment
Mountain big sagebrush	23%	26%
Big sagebrush	22%	20%
Low sagebrush	21%	24%
Juniper & other conifer	16%	15%
Rabbitbrush	5%	5%
Wet meadow	7%	4%
Bunchgrass	1%	2%
Mountain shrub	2%	2%
Exotic annual grasses	2%	1%
Agriculture & Misc.	1%	<1%
Total:	**100%**	**100%**

Ecological site mapping indicates expected vegetation cover at a rather gross scale, while PNNL mapping shows existing vegetation at a somewhat finer scale. Changes between the two are considered an indication of departure from reference conditions. In the Nickel Creek FFR Allotment, fairly minor departures are evident. Western juniper occupies about 15% of the allotment, which is slightly greater than the small percentage expected under reference conditions. This indicates localized juniper encroachment, particularly on the northern parcels of the allotment. Exotic annuals and agriculture are mapped at less than2% cover vegetation on BLM lands in the allotment, indicating a small amount of vegetation type conversion. The majority of the allotment is mapped as mountain big sagebrush, big (basin) sagebrush, or low sagebrush, as expected. This indicates that overall, plant community cover types are generally similar to what would be expected on the ecological sites.

The species composition of the understory (grasses and forbs) is not identified in the PNNL data, but is indicated from a 2003 assessment (USDI-BLM 2003a), 2011 interdisciplinary team field evaluation of indicators, and 2012 sage-grouse habitat assessments.

Big Sagebrush Communities

A Rangeland Health Assessment completed on the Nickel Creek FFR Allotment in 2003 described big sagebrush communities with slight-moderate departure from reference conditions, as shown by higher than expected Sandberg bluegrass and rabbitbrush, and lower than expected biological soil crusts and bluebunch wheatgrass, particularly in the interspaces. Both species diversity (including forb diversity) and Idaho fescue abundance were appropriate for the site. Cheatgrass and western juniper were present, with generally low cover. In 2011, two basin big sagebrush sites were evaluated, and conditions were similar to those described in the 2003 assessment (Figure 3.2). Sage-grouse habitat assessments were conducted in 2012 in two basin big sagebrush sites (Figure 3.3), and canopy and ground cover measurements (Table 3.3) indicate shrub cover within the expected range, reduced large bunchgrasses and biological soil crusts, and increased bare ground and cheatgrass compared to reference conditions.

Figure 3.2 - Typical big sagebrush vegetation in the Nickel Creek FFR Allotment in Pasture 25, July 2011

Figure 3.3 - Big sagebrush vegetation in Pasture 21, October 2012

Table 3.3 - Canopy and Ground Cover Measurements from Sage-grouse Habitat Assessments, October 2012

	Pasture 11 Low sagebrush site	Pasture 21 Big sagebrush site	Pasture 25 Big sagebrush site
Canopy Cover			
Sagebrush	20%	24%	24%
Other shrubs	4% bitterbrush	10% rabbitbrush	0
Large bunchgrasses	8% Idaho fescue, 2% squirreltail	0	6% bluebunch wheatgrass
Small bunchgrass	32% Sandberg bluegrass	28% Sandberg bluegrass	30% Sandberg bluegrass

	Pasture 11 Low sagebrush site	Pasture 21 Big sagebrush site	Pasture 25 Big sagebrush site
Invasive annual grasses	4% cheatgrass	6% cheatgrass	30% cheatgrass
Perennial forbs	8%	0	2%
Annual forbs	0	2%	0
Ground Cover			
Rock	30%	0	4%
Bedrock	24%	0	20%
Moss	4%	4%	4%
Lichen	2%	0	0
Soil (bare)	12%	24%	24%
Embedded litter	2%	10%	0
Duff	12%	50%	42%
Basal vegetation	12% Sandberg bluegrass, 2% Phlox	10% Sandberg bluegrass, 2% bluebunch wheatgrass	4% Sandberg bluegrass, 2% pussytoes

Low Sagebrush Communities

Low sagebrush communities also showed slight-moderate departure from reference conditions in the 2003 assessment, indicated by lower than expected large bunchgrasses and biological soil crusts, and higher than expected rock/gravel soil cover and sagebrush cover. Cheatgrass and juniper were present in some pastures, mostly at low levels. Species diversity and plant vigor were appropriate for the site (Figure 3.4). Two low sagebrush sites were evaluated in 2011, and conditions were similar to those described in the 2003 assessment, except that invasive plants appeared more common than the 2003 description indicated (Figure 3.5). In addition to localized western juniper encroachment and scattered cheatgrass patches (as described in 2003), other non-native grasses were present, as a minor component at one site and subdominant at the other site. These include the annual grasses "Japanese" brome, North Africa grass, and dense silkybent, and the non-native perennial bulbous bluegrass, none of which were mentioned in the 2003 field evaluation or assessment. One of the sage-grouse habitat assessments was conducted in a low sagebrush site in 2012 (Table 3.3), and canopy and ground cover indicated large bunchgrasses and biological soil crusts less than expected for the ecological site.

Figure 3.4 - Low sagebrush site in Pasture 4; 2001

Figure 3.5 - Low sagebrush site, showing an apparent increase in invasive annual grasses in Pasture 4; 2011;

No trend data is available for the Nickel Creek FFR Allotment.

Rangeland Health Standard 4 and Livestock Grazing Guidelines

A Rangeland Health Assessment was compiled in 2003 (USDI-BLM 2003a) and is updated in this section of the EA. A Determination was also completed in 2003, which evaluated grazing management up to that point. A new evaluation of Standards and new Determination were completed in 2013 (Appendix A), and replaced the 2003 Determination (USDI-BLM 2003b). The 2013 Determination evaluated conditions since livestock management changes were made around 2003. The 2003 Determination stated that Standard 4 (Native Plant Communities) was

not being met and livestock grazing management practices were significant factors. Livestock management practices identified for contributing to the non-attainment of the standard included seasons of use that coincided with critical growth periods of perennial grasses; also, utilization levels were not reported, but based on limited actual use reports could be high (USDI-BLM 2003b).

The 2013 Determination stated that Standard 4 was still not being met in the Nickel Creek FFR Allotment. Indications of this Standard not being met included less than expected large, perennial bunchgrasses and biological soil crusts, and the presence of invasive annual grasses, and to a lesser extent juniper. Based on available information, current (post-2003) grazing is not a significant factor in this determination. Current livestock management has generally resulted in light (less than 40%) utilization and in most pastures a shorter season of use as compared to pre-2003. Significant factors identified for not meeting Standard 4 included historic (greater than 50 years ago) and past (greater than ten years ago) grazing (and subsequent soil loss) and invasive plants. Western juniper encroachment was a minor factor, not currently driving ecological processes in most of this allotment.

Past (greater than 10 years ago) grazing has affected the existing upland plant communities by reducing large bunchgrasses (particularly bluebunch wheatgrass in most pastures and Idaho fescue in some pastures) and biological soil crusts, and allowed invasive annual grasses to gain a foothold in some pastures. Current grazing management practices are not a significant causal factor, but are maintaining the current plant communities. Significant progress toward meeting Standard 4 would be indicated by increased cover and density of large bunchgrasses.

Utilization and Actual Use

Limited utilization and actual use data are available. The season of use varies between pastures, and because use under the current permit is at the permittee's discretion, pastures may or may not have similar management between years. Before the early 2000s, many fields and pastures were used season long (USDI-BLM 2003a), but since about 2003, use in most fields has been more limited.

Table 3.4 shows utilization monitored in 2011 and 2012; utilization before 2011 is not available. Utilization data was collected in May, October and November 2011 and in October 2012. General utilization categories can be described as slight (0-20%), light (20-40%), moderate (40-60%), heavy (60-80%), and extreme (80-100%). Using these categories, utilization on the Nickel Creek FFR Allotment in 2011 and 2012 was slight to light.

Table 3.4 – Utilization and Average Plant Height of Key Species[1]

Pasture	Field	# of Stops	2011 Utilization[2]	2011 Avg. Key Spp. Heights	2012 Utilization[2]	2012 Avg. Key Spp. Heights[3]	Total Avg. Key Spp. Heights[3]
4	1, 3, 5	0	--	--	--	--	PSSP 31 in FEID 29.5 in
	2	2	3% PSSP 3% FEID	PSSP 31 in FEID 29 in	--	--	
	4	1	30% PSSP 29% FEID	PSSP 31 in FEID 30 in	--	--	
6	1	1	25% PSSP 23% ELEL	PSSP 35 in ELEL 22 in	--	--	PSSP 35 in FEID 30 in
9	1	2	4% PSSP 5%FEID	PSSP 29 in FEID 29 in	--	--	PSSP 29 in FEID 29 in
11	1	2	3% PSSP 3% FEID	PSSP 33 in FEID 29 in	38% FEID	FEID 6 in	PSSP 33 in FEID 23 in
	2	1	6% FEID	FEID 28 in	--	--	
	3	1	4% FEID	FEID 28 in	--	--	
	4, 5	0	--	--	--	--	
14	1	2	25% FEID 35% FEID	FEID 21 in FEID 25 in	--	--	PSSP 31 in FEID 17 in
	2	3	14% FEID 33% FEID 34% PSSP 20% FEID	FEID 5 in FEID 2 in PSSP 31 in FEID 29 in	--	--	
	3, 4, 5	0	--	--	--	--	
	6	1	21% FEID	FEID 18 in	--	--	
19	1	1	15% PSSP 7% FEID	PSSP 9 in FEID 7 in	--	--	PSSP 10 in FEID 7 in
	2	1	3% FEID 3% PSSP	FEID 7 in PSSP 11 in	--	--	
21	1	1	4% FEID	FEID 6.5 in	26% FEID	--	FEID 6.5 in
23	1	1	3% FEID	FEID 6 in	--	--	FEID 6 in
24	1, 2	0	--	--	--	--	PSSP 5 in
	3	1	24% PSSP	PSSP 5 in	--	--	
25	1	1	3% PSSP 3% POSE	PSSP 10 in POSE 7 in	19% PSSP	PSSP 9 in	PSSP 9 in

1 - Utilization monitoring was not conducted in fields indicated by dashes (--).

2 - PSSP = bluebunch wheatgrass, FEID = Idaho fescue, ELEL = squirreltail, and POSE = Sandberg bluegrass

3 - Stubble heights of key species were not collected during 2012 utilization monitoring. Average key species heights were taken from 2012 sage-grouse habitat assessment transects completed at same location. These species heights are only applicable to the wildlife analysis.

Disturbance and Fire History
A few fires have been recorded in BLM's fire history in the Nickel Creek FFR Allotment. In Pasture 6, the 2000 Deep Hog Fire burned roughly 60% of the private land in the pasture, but just a few acres of public lands. The 1985 Cottonwood Field Prescribed Fire burned about 44 acres of private land in Pasture 9. The 1999 Nickel Creek Fire burned 316 acres, mostly within Pasture 11; about 60% of this was on private lands and about 40% on public lands (about 122 acres of BLM). In Pasture 25, the 1986 Porcupine Fire burned about 300 acres on state and private land, but no public land in this pasture. Thus, only public lands in Pasture 11 have documented substantial fire effects. No information about current conditions of this burned area is available although the 2001 and 2011 field evaluations visited an unburned portion of the pasture. In general, previous fires in this part of the field office at this elevation (about 5,200 feet) have recovered reasonably well to native and seeded grasses.

Grazing has occurred on this allotment presumably since settlement times. Private lands in the allotment have been managed variously as unimproved grazing pasture or irrigated pasture. A few private land areas within the allotment have had juniper treatment (mastication or removal).

Weeds
BLM noxious weed records show very few infestations on the Nickel Creek FFR Allotment. A small patch of Scotch thistle was treated on the Mud Flat Road at the edge of Pasture 4 in 2005, and a small patch of whitetop was recorded (and treated) on private land in Pasture 14 in 2008. An infestation of Russian knapweed in Pasture 14 mentioned in the 2003 Assessment is actually in the Nickel Creek Allotment; small patches have been treated in 2001 and 2005.

Invasive weeds include localized patches of cheatgrass, bulbous bluegrass, "Japanese" brome, and dense silkybent, and widely scattered weedy forbs (bur buttercup, salsify, tumble-mustard, flixweed, etc.). Although not dominant within the allotment, there is an apparent increase of "Japanese" brome, North Africa grass, and/or dense silkybent between the 2001 and 2011 field evaluations, at some sites.

Biological Soil Crusts
Little information is available on biological soil crusts. The 2003 Assessment mentions soil crusts similar to reference conditions in Pasture 9, but reduced in Pastures 19, 21, 24, and 25 in big sagebrush sites, and less than expected or absent (particularly in interspaces) in low sagebrush sites. The 2011 field evaluations noted biological soil crusts as less than expected at the four sites visited, and often restricted to under shrubs. Point intercept data collected with the 2012 sage-grouse habitat assessments (Table 3.3) found 4-6% ground cover by biological soil crusts (moss or lichen), much lower than bare ground (12-24%), and lower than what would be expected under reference conditions in the three pastures assessed.

3.1.2 Environmental Consequences

3.1.2.1 All Alternatives

Because Standard 4 is not being met due to factors other than current livestock grazing management, changes in grazing management alone would not cause the allotment to meet or make significant progress toward meeting the Standard. The allotment would still be influenced

by the causal factors of soil and large bunchgrass loss from past grazing and the presence of invasive weeds over the term of the permit. Soil recovery would take much longer than ten years, and invasive weeds are expected to be stable at best. The alternatives differ somewhat in their effects on vegetation, and trends are identified for each alternative, but because of the other limiting factors, short-term recovery is not expected.

3.1.2.2 Alternative A

Current livestock grazing management is not identified to be a significant causal factor for the non-attainment of Standard 4. Implementation of Alternative A (continuation of current grazing management) is therefore expected to maintain upland vegetative resources.

Alternative A is expected to result in no more than 40% upland utilization, as has occurred under recent management (Table 3.4). However, there are no Terms and Conditions to keep it at this level. This level of utilization is appropriate for maintaining upland vegetation in the Nickel Creek FFR Allotment. As identified in the 2013 Determination, this grazing intensity and management would maintain perennial bunchgrass vigor. The ORMP objective of 50% upland utilization would still apply.

Grazing effects on vegetation are related to the intensity, duration, frequency, and season of use (Reed et al. 1999). Utilization is an indication of intensity of use. Generally, the grass species vigor can be sustained with light or moderate utilization, while repeated heavy utilization reduces photosynthetic tissue below levels needed to maintain root reserves.

Upland sites grazed in excess of 50% utilization would need to be adjusted to ensure grazing does not cause an unacceptable level or pattern of utilization. Alternative A includes spring, summer, and fall use, in different pastures, providing for a mosaic of seasonal use across the landscape and allowing seed set in deferred pastures and potential regrowth in early use pastures.

Effects on forbs from Alternative A are expected to be similar to those described above for bunchgrasses. Forbs may be less likely to regrow within a grazing season because often their growing points are elevated with growth and thus easily removed, even with light grazing. Also, some forbs are highly palatable and sought out by grazing animals.

Palatable shrubs and trees, such as bitterbrush and aspen, would be expected to have higher grazing/browsing effects in pastures used in the fall (such as Pasture 11 Field 5) than those used in the spring. Fitzgerald et al. (1986) found that cattle preferred herbaceous species when they were present, but selected woody browse species late in the season as grasses matured. Under the level of use expected in Alternative A, these are expected to remain stable in fall-use pastures, and improve in pastures without fall use.

Annual grasses, which in this allotment are mostly non-native invasive species, would be expected to remain static under Alternative A. The grazing intensity under Alternative A during the critical time for controlling annual grasses is not expected to be high enough to have a measurable direct effect on their abundance. Effects from Alternative A on invasive annual forbs, which are relatively few in the allotment, are likely to be similar, and no increase in these weeds is expected.

Implementation of Alternative A is expected to have little or no effect on noxious weed infestations in the Nickel Creek FFR Allotment. The existing small patches of Scotch thistle would continue to be treated under the Boise District's Noxious and Invasive Weed Treatment EA (USDI-BLM 2005). Plant community structure is expected to maintain sufficient vegetation cover to provide few open niche areas for noxious weeds to become established or thrive. Thus, an increase in noxious weeds is not expected.

The effects of Alternative A on biological soil crusts are expected to be similar to those on vegetation in general. Under the proposed level and seasons of use, biological soil crusts are expected to be maintained. The biological soil crusts on clay sites are more sensitive to trampling disturbance when wet, because crusts are displaced more on clay soils when wet; however crusts on loamy soils are more sensitive when dry (Belnap et al. 2001). Biological soil crusts are important for increasing soil stability and capturing nutrients, and can affect vascular plant species composition (Rosentreter et al. 2007, Wicklow-Howard et al. 2003).

Alternative A would be expected to maintain existing upland vegetation in the Nickel Creek FFR Allotment because pasture rotations limit the length of time per pasture and upland utilization is expected to be generally less than 40% (and limited to no more than 50%). The effects from past grazing (top soil loss and reduction of large bunchgrasses) and the presence of invasive annual grasses (and to a lesser extent western juniper) in some pastures, which are causal factors for not meeting Standard 4, would still influence upland native plant communities in the allotment, at least for the short term (next ten years). Recovery from soil loss would take longer than the ten-year term of this permit, and invasive grasses (and western juniper) are expected to be stable, at best, precluding significant progress. The effects described above are expected to be similar in all of the three major types of ecological sites in the allotment (low sagebrush, mountain big sagebrush, and basin big sagebrush-dominated communities).

3.1.2.3 Alternative B

Alternative B is expected to maintain upland vegetative resources because utilization would be limited to 40%, and as discussed in Alternative A, this level of use is generally suitable to maintain perennial bunchgrass vigor in the Nickel Creek FFR Allotment.

Alternative B differs from Alternatives A and D in that a specific season of use is not assumed or required. Therefore, use in any pasture could occur at any time throughout the year, with no limits on duration, frequency, or animal numbers, as long as an average of 40% utilization per pasture or field and total AUMs for the allotment were not exceeded. Thus, under Alternative B, use could occur primarily during the critical growing season when plants are most sensitive (Anderson 1991; Ganskopp 1988). Extended use, or long duration per pasture, would also be permitted under Alternative B, leading to repeated defoliations of individual bunchgrasses, potentially decreasing plant vigor, productivity, and viability (Reed et al. 1999). No rest or deferment would be required in Alternative B. However, implementing the 40% upland utilization limit would enhance potential negative effects of growing season or long duration use, and is expected to maintain perennial bunchgrasses.

Effects on forbs, annual grasses, noxious weeds, and western juniper would be similar to those described in Alternative A, based primarily on the limited utilization. Effects on palatable shrubs and trees would also be similar to those described in Alternative A, depending on the season of use, potentially, with more effects on upland browse shrubs in the fall or winter and less in the spring or summer. Effects on biological soil crusts would be the same as described in Alternative A for summer and fall use, but winter or wet spring use would potentially have more effects on biological soil crusts because the clay soils in the allotment are more subject to displacement (and dislodging crusts) when wet (Belnap et al. 2001).

The allotment would still not meet or make significant progress toward meeting Standard 4 because the causal factors (soil loss, past livestock grazing that reduced large bunchgrasses, and invasive plants) would still affect upland vegetation over the term of the permit. Effects from Alternative B are expected to be similar to effects from Alternative A (current management), and current management was not identified as a causal factor for the non-attainment of Standard 4. Upland vegetation would be expected to be maintained in its current condition.

3.1.2.4 Alternative C

Implementation of Alternative C would result in no direct livestock grazing effects on upland vegetation or weeds because no permitted livestock grazing would occur. Native plant vigor and reproduction and soil nutrient and water cycling would not be limited by livestock grazing.

Without livestock grazing, increased grass and forb cover is expected, resulting in an increase in fine fuels. Increased levels and continuity of fine fuels may potentially increase wildfire size and intensity (Davies et al 2009).

Indirect effects from extended rest on upland vegetation and noxious and invasive weeds would lead to slow, long-term (greater than 10 years) improvement in plant community health, limited only by past soil and large bunchgrass loss and the presence of invasive weeds. Treatment of existing noxious weed infestations would continue, leading to a reduction in noxious weeds.

Although the allotment is not expected to meet or make significant progress toward meeting Standard 4 in the next ten years because of limitations from causal factors (soil and large bunchgrass loss from past grazing, and the presence of invasive annual weeds), long-term (greater than 10 years) improvement in upland vegetation conditions would be expected if no grazing continued.

3.1.2.5 Alternative D

Alternative D requires a specified season of use and limits the duration in any field or pasture to no more than 30 days a year. As a result, there would be less regrazing of individual bunchgrasses within a season, reducing repeated defoliations and improving plant vigor, compared to Alternatives A and B. Alternative D has more deferred use than Alternatives A and B, because five riparian fields would be used only in the fall, rather than the spring/summer use allowed in those alternatives. Additional deferred use provides that more pastures or fields would not have growing season effects, and plants in those fields would be allowed a full growing season to generate carbohydrate reserves, produce seed, and allow for seedling establishment. In addition, utilization limits of 30% in the spring and 40% in other seasons limit

the intensity of use in all pastures, and grazing impacts to perennial bunchgrass vigor and productivity would be minimized. Because grazing intensity is limited, trampling effects on biological soil crusts and seedlings would also be expected to be lower than in Alternatives A or B.

As a result, grazing effects on perennial bunchgrasses, forbs, and biological soil crusts would be expected to be lower in Alternative D than in Alternatives A and B. Rather than maintain conditions, a slow improvement in upland vegetation would be expected.

Utilization of palatable shrubs would be slightly increased because of the shift from spring/summer to fall use in some pastures. Overall use in those pastures is expected to be light, and so use of woody browse species is also expected to be light. Thus, shrub browse species are expected to be maintained or slowly improve under this alternative.

Annual invasive grasses would continue to be present, but as bunchgrasses and biological soil crusts gradually improved over the long term (greater than 10 years) and reduced the amount of bare ground, the annuals would not increase and possibly decrease. Treatment of noxious weeds would continue.

Although the allotment is not expected to meet or make significant progress toward meeting Standard 4 in the next ten years because of limitations associated with causal factors, long-term (greater than 10 years) improvement in upland vegetation conditions would be expected if management under Alternative D continued.

3.2 Watershed, Soils, Riparian, and Water Quality

3.2.1 Affected Environment

The Nickel Creek FFR Allotment spans four watersheds (North Fork Owyhee River, Headwaters Deep Creek, Deep Creek and Red Canyon-Owyhee River) and is part of the Upper Owyhee sub-basin (HUC 170050104). Pastures 4, 6, 11, and approximately four acres of public land in Pasture 9 are within the Headwaters Deep Creek watershed. The remaining acres of Pasture 9 are in the North Fork Owyhee River watershed. Pastures 14, 19, 21, 23, and 24 are within the Headwaters Deep Creek watershed, and Pasture 25 is within the Red Canyon-Owyhee River watershed.

The soils in these pastures are diverse mainly due to position on the landscape, climate, and source of parent materials. The majority of these soils occur on foothills, structural benches, and tablelands. A small but important portion occurs on stream and fan terraces. Most soils formed in mixed alluvium and residuum from welded rhyolitic tuffs and breccia. These soils are shallow to moderately deep (with deeper inclusions) and well drained. The upper elevation areas have a frigid soil temperature regime, while the lower elevation sites are mesic. Soil moisture regimes are mostly xeric with the lower elevation areas bordering aridic. Generally, the northern pastures are shallow claypan sites and southern pastures are loamy sites. The Hat, Cleavage, Wicahoney, Monasterio, and Yatahoney soil series are more representative of the upper elevation soils while the Willhill and Dougal soil series better typify the lower elevation sites. These soils are typically loamy to clayey with high amounts of coarse fragments on the

surface and in the profile. The stream and fan terraces are represented by the Paynecreek, Bluecreek, and Northcastle soil series and are moderately deep to very deep. Appendix D has descriptions of soil series within the allotment.

The hazard of erosion on these soils from water is rated as slight to moderate, with the exception of the soils that occur on slopes greater than 30 percent, where the hazard of erosion is rated as moderate to very high. Approximately 138 acres of public land, or seven percent of the allotment, has the potential for moderate to very high water erosion. The risk of erosion from wind is generally low. The amount of surface rock fragments can greatly modify the risk of erosion due to the cover they provide.

Susceptibility of soil to rill and sheet erosion, for the whole soil fraction, is low to moderate and to wind erosion is low. The susceptibility of soils to frost action generally increases geographically from south (low to moderate) to north (moderate to high) within the allotment.

Vegetation is the primary factor that influences the spatial and temporal variability of soil processes and as vegetation condition changes, so does runoff, erosion, and infiltration. The 2003 Assessment identified erosion indicators such as pedestalled bunchgrass and water flow patterns that were observed throughout the allotment, but varied in intensity. Biological soil crusts were lacking in areas that usually support the crusts. Field evaluations of indicators conducted in 2011 in Pastures 4, 11, 24, and 25 also noted pedestalling, historical soil loss, a lack of biotic crust, and invasive species at all stops. However, in most cases the current vegetation, litter and rock were adequate to prevent further soil erosion. Most of the conditions associated with a negative effect to watershed function are attributed to past events rather than current management. This conclusion is based on determinations that watershed health conditions are being maintained.

Indications of accelerated soil erosion such as water flow patterns and pedestalled bunchgrasses are identified throughout the allotment. Prior to 2003, impacts to soil cover and litter necessary for soil site stability resulted in accelerated surface erosion. 2013 evaluations indicate that plant vigor appears unchanged or stable compared to 2003 evaluations. Therefore, it is expected that the stable vegetation conditions have a corresponding stabilization effect to erosive actions within the same area. No increases to soil erosion were observed. Livestock grazing management is not identified to be a significant causal factor for the non-attainment of Standard 1 and may not be contributing to a degradation of any of the Standards.

Approximately 4 miles of streams on public land are within the Nickel Creek FFR Allotment. Of those streams, about 1.5 miles are accessible by livestock while the remainder are inaccessible due to either fencing or topography. Stream drainages include Castle, Deep, Nickel, and Smith Creeks. No known springs occur on public lands within the allotment.

Table 3.5 - Nickel Creek FFR stream reaches by pasture and livestock accessibility

Pasture Number	Stream Name	Reach Miles	Livestock Accessible
4	Nickel Creek	0.05	No
6	Current Creek	0.16	Yes

Pasture Number	Stream Name	Reach Miles	Livestock Accessible
6	Deep Creek	0.07	Yes
11	Smith Creek	1.10	No
11	Smith Creek	0.40	Yes
11	Nickel Creek	0.65	No
14	Castle Creek	0.32	Yes
14	Unnamed Tributary of Castle Creek	0.47	Yes
19	Castle Creek	0.23	Yes
19	Deep Creek	0.78	No

Riparian/Wetlands

Two lotic Proper Functioning Condition (PFC) assessments were conducted in 2011 on the 0.32-mile segment of Castle Creek in Pasture 14 and the 0.40-mile segment of Smith Creek in Pasture 11. Both were rated as functional at-risk (FAR) with apparent upward trends.

The Castle Creek segment (0.32 miles) is considered a response reach that is deeply entrenched with a low gradient. The current incised but meandering channel has dense riparian vegetation comprising of both woody and herbaceous species. Signs of historic excessive erosional events (channel entrenchment) occur on almost the entire segment (from pasture boundary to private land). Erosion still occurs on cut banks; however, dense riparian vegetation prevents much of the bedload transference into private lands or Deep Creek. No livestock impacts such as hoof shearing, woody browse, or heavy use were observed in the 2011 PFC assessment. Riparian vegetation appeared healthy with high vigor. Many young but no mature willows observed. There is a small reservoir approximately 0.7 miles upstream that controls flows in that segment from April 1 to October 3. That segment is frequently dry in July because of the irrigation diversion, and the only water this segment receives is from irrigation excess.

Smith Creek segment (0.4 miles) is a low gradient, C channel that is deeply entrenched in some areas. Width to depth ratio is out of balance with landscape form and geology. The channel is too wide for the water volume. Historic, excessive erosion is evident by the heavy bedload in channel and cutbanks. Riparian area is widening and re-vegetating with willows, sedges and rushes whose root masses are sufficient to hold bank sediment during high flow events. Riparian vegetation is re-establishing and beginning to stabilize gravel/sand bars. Downstream a headcut armored with cobble-sized stone was observed, and is not likely to be a future channel issue due to the rock armoring. Flow is likely intermittent and not as perennial as once thought, however several redband trout were observed and that reach could be considered a fishery.

Currently, the 2013 Determination identifies Standards 2 and 3 as not being met, due to the deeply entrenched channels, increased width-to-depth ratio and excessive bedload (sediment). Current livestock management is not a significant factor in the determination. However, the allotment is making significant progress towards meeting both Standards, as indicated by herbaceous riparian vegetation re-stabilizing streambanks. The young age class of willow was the only size observed, inferring that there were no mature willow or if willow previously existed

there, it was removed either by excessive grazing and/or mass erosional movement. Castle and Smith Creeks are so deeply entrenched that it is unlikely either would be considered PFC in the near future due to their geomorphology. PFC assessments completed for area streams between 2003 and 2011 identified an upward trend due to an increase to riparian vegetation (both woody and herbaceous) and an observed stabilization of sandbars.

Water Quality

Stream drainages within the Nickel Creek FFR include Castle, Deep, Nickel, and Smith Creeks. Streams with designated beneficial uses are addressed under the Idaho Administrative Procedures Act 16.01.02.140. All streams within the Nickel Creek FFR Allotment have general use designations for secondary contact recreation, agricultural water supply, wildlife habitat, and aesthetics. Deep, Nickel, and Smith Creeks have been assigned additional beneficial uses that include cold water aquatic life and salmonid spawning. Castle Creek has been assigned the beneficial use of cold water aquatic life. The Idaho Department of Water Quality (IDEQ) identified Deep, Nickel, and Smith Creeks as not fully supporting cold water aquatic life and salmonid spawning beneficial uses, and Castle Creek was not fully supporting cold water aquatic life beneficial use. Consequently, these streams are on the State of Idaho's 303(d) list as water quality limited due to excess sediment/siltation and water temperatures. Total maximum daily loads (TMDLs) were developed for sediment/siltation and stream temperature in Deep, Nickel, Smith, and Castle Creeks.

Upper Owyhee River Five Year Review (IDEQ 2009) identified that Deep Creek and Castle Creek (3rd order) reaches in the Nickel Creek FFR have improving water quality trends as related to sediment and stream temperature TMDLs, and Nickel and Smith Creeks have static water quality trends. Also, IDEQ stated the stream temperature targets were unattainable, and recommended re-writing the temperature TMDL using the potential natural vegetation approaches that uses shading as a surrogate for temperature.

Riparian vegetation (sedges, rushes, and young willows) is establishing on sand bars and bedload deposits in Smith and Castle Creeks and are holding streambank sediments together during high flows. The channel forms (sinuosity, width-to-depth ratio) are not in balance with the landscape and will not be, for many years, due to the severity of channel entrenchment. Exposed soil within entrenched stream channels continues to be eroded. However, the observed increase in riparian vegetation is improving streambank/sandbar stabilization and improving riparian buffer strip capacity between the uplands and streams. Additionally, the improving riparian communities increase stream shade and cool a portion of surface water. Idaho DEQ's five-year review identified either improving water quality trends or static water quality trends for the streams, while both lotic PFCs identified apparent upward trends for the two streams.

Standard 7 is not being met as indicated by non-attainment of Idaho water quality standards. The deeply entrenched channels, increased width-to-depth ratio, and excessive bedload (sediment) are contributing excess sediment to stream channels and increasing stream temperatures. Channel and floodplain characteristics that would contribute to the function of a stream system are related to upstream watershed inputs that include all ownership. Upstream management, irrigation diversions, sediment delivery, temperature increases, would all degrade the stream channel and floodplain access lower in the watershed. Because BLM is managing such a small

portion of the overall watershed within this project, it can be concluded that the non-attainment of Idaho water quality standards is due to the accumulation of activities within the watershed. However, the allotment is making significant progress towards meeting Standard 7, which is due mainly to an increase to riparian vegetation stabilizing streambanks.

The Evaluation and Determination (Appendix A) summarizes the impacts to the Standards associated with the watershed and soils resources. The Standards were evaluated based on a ten-year permit period. The effects were qualitatively identified as an expectation of resource response within the next ten years. The allotment is not currently meeting Standard 1 (Watersheds); however, current livestock management was not the significant causal factor. Standard 3 (Stream channel/floodplain) is also not being met, but the area is making significant progress toward meeting this standard. These standards are closely connected to each other because the stream channels and floodplains reflect past watershed problems. The shift in upland vegetation species composition, past soil loss, and increases in non-native annual grasses would have caused a shift in watershed response that affected the channel and floodplain characteristics. The stream channels and floodplains are representative of the watershed runoff response (volume and timing) and associated sediment loads. Therefore, until the stream channels and floodplains have fully transitioned to the changed watershed condition, they will not meet standards.

3.2.2 Environmental Consequences

3.2.2.1 All Alternatives

As described in the Affected Environment, the evidence of a transition/recovery is apparent in the riparian vegetation conditions. Effects would not be immediately realized in the stream channel, floodplains, or watershed as a whole even though the terms and conditions identified within all of the alternatives may result in a direct, observable, and positive response within the riparian areas. Because there are so many variables that contribute to watershed health and channel function related to upstream activities, it is difficult to attribute grazing management within the Nickel Creek FFR to direct or immediate improvement of Standards 1 and 3 within the timeframe associated with the permit renewal. Full recovery to meet these standards will require more than ten years and may not be gained solely because of changes exclusive to livestock management. As a whole, prescribing livestock management in the allotment has very little influence on achieving the standards because of other activities within the watershed that also influence conditions (irrigation, private land development, past management, wildfire, invasive or noxious weeds, and vegetation structure and diversity). Therefore, these standards are not discussed further.

3.2.2.2 Alternative A

Overall, the implementation of Alternative A (continuation of recent grazing practices) is expected to maintain watershed and soil resources in their current condition. Even though this alternative may result in localized improvements, there is no expected watershed-wide change to the current determination of Standards 2 and 7. Actual utilization levels of up to 40% appear to be maintaining the condition of watershed, riparian, and soil health. However, this alternative allows a utilization of up to 50%, which, if implemented would likely slow the rate of progress towards improvement of watershed, riparian, and soil conditions.

Generally, in the short and long terms (2 and 10 years, respectively), Standard 2 (Riparian and wetland areas) would continue to improve toward a fully functioning condition. Riparian stubble heights on all assessed livestock accessible reaches were at or above four inches. Clary (1999) recommended leaving a 10-15 cm (4-6 inch) herbaceous stubble height at the end of the growing season after grazing for meadow riparian recovery. In the long term, the early-seral dominated riparian vegetation communities would eventually change to communities dominated by late-seral, deep-rooted species. Stream channels would improve as they narrow and deepen, and streambanks would stabilize due to deep-rooted riparian vegetation. Aquatic habitat conditions would improve as channel form recovers, fine sediment levels decrease, and stream shading levels increase due to the development of dense and vigorous riparian plant communities. Clary (1999) found that the overall fluvial and vegetative response improved with moderate grazing (35-50% utilization); stream channels narrowed, stream width-to-depth ratios were reduced, and channel bottom embeddedness decreased.

This alternative is expected to result in a continued, observable increase to health, density, and vigor of riparian vegetation. An improvement in vegetative conditions that also improves riparian function would stabilize streambanks and decrease sedimentation, turbidity, and stream temperatures (Standard 7). These channel improvements would then improve aquatic habitat conditions as channel form recovers, fine sediment levels decrease, and stream shading levels increase. Deep Creek may be the only exception under this alternative. Elevated water temperature and sedimentation in Deep Creek is a response to the land use practices on adjacent, upstream grazing allotments and private lands, therefore, may not improve as much or as quickly as other stream reaches.

An indirect but slight improvement to Standard 7 (Water quality) is expected because of the expected improvement in riparian vegetation. As vegetation condition improves, plant litter and below ground biomass also increases which would decrease water runoff and soil erosion potential in the long term (greater than 10 years). More vegetation and litter covering the soil surface protects the soil from raindrop impact, improves soil organic matter, and would lead to improved nutrient cycling. The allotment would take decades to centuries to reestablish soils that were lost to erosion. Slow biomass accumulation is expected within Alternative A, resulting in a steady, long-term improvement to soil development, watershed response, riparian areas, wetlands, and water quality within the boundaries of the project. Short-term improvements would be difficult to discern compared to current condition, especially since the project area is such a small proportion of the contributing watersheds that influence recovery rates. All of these factors would eventually improve the water quality and support to beneficial uses downstream.

Other impacts associated with this alternative would include the soil disturbance due to hoof action at congregation points, such as fences and salt lick areas. Hoof action effects would be localized and minor due to livestock number, season, and duration of use. Overall, grazing effects to the watershed and soils resource would be minimal in the short and long terms (up to five years and ten years and beyond, respectively).

3.2.2.3 Alternative B

Effects to Standards 2 and 7 are similar to those identified in Alternative A and it is expected that this alternative will make significant progress towards meeting standards. However, this alternative allows more risk and some benefits in a given year.

With implementation of this alternative, prescribed monitoring would ensure riparian habitat for wildlife is maintained or improved over the term of the permit. This monitoring would reduce the likelihood of long-term degradation to riparian and upland function and health by meeting annual indicators (four-inch stubble height, 25% woody browse and 40% upland utilization). However, even though this alternative would make progress towards meeting Standards, it assumes more risk of impairment in a given year than the other alternatives. The potential for repeated defoliations of individual bunchgrasses and/or riparian vegetation through authorization of spring, summer, and fall grazing may decrease plant vigor, productivity, and viability. Within riparian areas, improvement would be determined by season of use and duration. For example if a pasture was grazed in the spring and fall, improvement to sedges would be reduced compared to the same pasture grazed in the spring only (Kauffman, 1983). For this reason, it is expected that long-term improvement would be similar to Alternative A, but would take longer than Alternative D.

Effects to water quality are connected to riparian vegetation conditions. Any improvement of riparian function would stabilize streambanks and decrease sedimentation, turbidity, and stream temperatures. Due to the potential that grazing may affect riparian vegetation multiple times per year, there is a risk of degradation to channel form, increased fine sediment levels and decreased stream shading levels. Even though improvements are expected (as described in Alternative A), Alternative B poses more risk to water quality because of the potentially longer duration or the selection of an unsuitable season of use.

The benefit of annual monitoring would increase short and long-term understanding of the riparian and upland areas in this allotment. This type of cooperative monitoring would also help educate the JMGA on riparian and upland needs that may be applied to private lands or other lands on which they graze.

3.2.2.4 Alternative C

Long-term (greater than 10 years) improvement in plant community health is expected as a result of implementing Alternative C. Extended rest from livestock grazing for a ten-year period would result in an improvement to the soils/watershed resource (Standard 1), due to biomass accumulation. No livestock trampling or soil compaction would occur and soil cover from vegetative litter would increase, resulting in increased productivity and reduced soil loss from raindrop impact, overland flow and mechanical impacts from livestock. While Alternative C is not expected to provide full recovery of the soil resource, the 10 years of rest would provide an accumulation of biomass that will move the watershed toward its ecological potential at a faster rate than the other alternatives.

Alternative C would continue current progress towards meeting Standards 2 and 7. Although the effects of rest from grazing would improve riparian and stream function as in Alternatives A and D, it is expected that the improvements would be faster within this alternative. Effects of this

alternative would include immediate increases in both herbaceous and woody riparian vegetation. Streambank damage due to hoof impacts, woody shrub use, and herbaceous stubble heights would be expected to meet all riparian objectives. All lotic resources within the allotment would be affected and their conditions would be expected to improve. In the long term, early-seral dominated riparian vegetation communities would eventually change to riparian communities dominated by late-seral, deep-rooted species. Stream channels would improve as they narrow and deepen, and streambanks stabilize due to the bank-stabilizing abilities of deep-rooted riparian vegetation. Aquatic habitat conditions would improve as channel form recovers, fine sediment levels decrease, and stream shading levels increase due to the development of dense and vigorous riparian plant communities. With the improvement in riparian health, progress would be made toward meeting Standard 7.

3.2.2.5 Alternative D

Alternative D would reduce upland utilization, limit the season of use to 30 days or less, and restrict the season of use in five pastures or fields. Changing the season of use in five pasture or fields to only September 15 to November 20 could allow for increase willows use since cattle diets in the fall do include woody browse. This shift generally occurs when the herbaceous vegetation stubble height decreased as noted in a study by Pelster (2004) in Colorado. In this study the 25% utilization limit for willows was exceeded in some instances depending upon intensity of use. In another study, Kauffman (1983) suggested that a shift to shrub use did not occur until 10 cm (4 inch) remained, but in some instances highly palatable shrubs may be used before 10 cm (4 inches). Because of a lack of clear information, limiting the duration to 30 days and requiring a six-inch stubble height should minimize any effect of fall browsing on willows. However long term improvement is expected to be greater than Alternative A since current management allows for spring use in these pastures.

Alternative D would also include a minimum of six-inch stubble height. Clary (1999) recommended spring/early summer grazing with 10-15cm (4-6 inch) stubble height at the end of the growing season for meadow riparian recovery. Herbaceous riparian vegetation is typically less likely to be overgrazed in the fall because of cooler air temperatures and livestock water demands tend to be lower which should help shift some use to the uplands. Due to fall season of use and the higher elevation of the area, livestock would tend to leave riparian areas for uplands compared to hot season grazing. Less time in the riparian areas (30 days versus 45 days) and improved cattle distribution due to cooler temperature would equate to less streambank damage due to hoof impacts and decreased utilization of riparian vegetation. The minimum six-inch riparian stubble height will be applied in Current Creek, Deep Creek, Smith Creek, Castle Creek and various unnamed tributaries and is expected to reduce streambank damage. For these reasons, the allotment would continue to make significant progress towards meeting Standard 2.

The improvement in riparian health would help improve water quality (Standard 7) through reduced sediment during high flow events, and reduced width and depth of the streams resulting from reduced bank trampling which reduces the potential for solar radiation thus reducing water temperature.

3.3 Fish and Wildlife/Special Status Animals

3.3.1 Affected Environment – Wildlife/Special Status Animals

Wildlife Habitat

The dominant upland wildlife habitats within the Nickel Creek FFR Allotment include western juniper woodlands, mountain shrublands, sagebrush steppe, native grasslands, and sparsely vegetated rocky outcrops and canyons. Riparian/wetland wildlife habitats are more limited in abundance and extent and include wet meadow complexes and woody and herbaceous riparian areas along perennial and intermittent streams and around springs, seeps, and reservoirs (Table 3.6). Overviews of upland and riparian vegetation communities within the Nickel Creek FFR Allotment have been discussed in detail in Sections 3.1and 3.2.

Table 3.6 - Major habitat and general cover types within the Nickel Creek FFR Allotment

Habitat Type	General Cover Type	Percentage of Allotment	
		General Cover Type	Habitat Type
Grassland	bunchgrass	1%	1%
Shrub Steppe[1]	big sagebrush[1]	24%	66%
	mountain big sagebrush	22%	
	low sagebrush	20%	
Mountain Shrub	mountain shrub	2%	2%
Forest	juniper & other conifer	15%	15%
Riparian	wet meadow	7%	7%
Non-native/Disturbed	exotic annuals	2%	9%
	rabbitbrush	5%	
	agriculture & misc	2%	

1 - Big sagebrush cover types include communities dominated by the subspecies Wyoming, Basin, and mixed communities dominated by either subspecies. Mountain big sagebrush and low sagebrush cover types comprise the remaining sagebrush communities.

Rangeland Health Standard 8

Rangeland Health Standards (Standards) are interrelated, especially when addressing wildlife special status species requirements. Standards 1-7 provide the basis for healthy wildlife habitats that are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species. Indicators for Standard 8, Threatened and Endangered Animals include:

- Parameters described in the Idaho Water Quality Standards.
- Riparian/wetland vegetation with deep, strong, binding roots is sufficient to stabilize streambanks and shorelines. Invader and shallow rooted species are a minor component of the floodplain.
- Age class and structural diversity of plant species are appropriate for the site.

- Native plant communities (flora and microbiotic crusts) are maintained or improved to ensure the proper functioning of ecological processes and continued productivity and diversity of native plant species.
- The diversity of native plant and animal communities are maintained.
- The amount and distribution of ground cover, including litter, for identified ecological site(s) or soil-plant associations are appropriate for site stability.
- Noxious weeds are not increasing.

Upland Wildlife Habitat

Previous Assessment

The 2003 Assessment was based on nine rangeland indicators conducted in 2001. Standard 4 applied to all areas of the allotment. The 2003 Assessment described low sagebrush communities as showing slight-moderate departure from reference conditions, indicated by lower than expected large bunchgrasses and biological soil crusts, and higher than expected rock/gravel soil cover and sagebrush cover. Cheatgrass and juniper were present in some pastures, mostly at low levels. Species diversity and plant vigor were appropriate for the site. The Assessment described similar conditions in big sagebrush communities with slight-moderate departure from reference conditions, as shown by higher than expected Sandberg bluegrass and rabbitbrush, and lower than expected biological soil crusts and bluebunch wheatgrass, particularly in the interspaces. Both species diversity (including forb diversity) and Idaho fescue abundance were appropriate for the site. Cheatgrass and western juniper were present, with generally low cover.

Current Assessment

The 2011 rangeland indicators found conditions similar to those in 2001 at the four sites evaluated. Soil loss, invasive species, and reductions in large bunchgrasses (particularly bluebunch wheatgrass) showed departures from reference conditions. The reduction in large bunchgrasses appeared to be the result of past impacts because the vigor of the plants present was appropriate for the site, reflecting recent adequate to high precipitation, little current utilization at the time of evaluation, and presumably recent years' grazing management. Invasive species included Phase 1-2 juniper encroachment in some areas, and the presence (and in some cases abundance) of non-native annual grasses; these exotic grasses included several species not noted in the 2001 field evaluation. Based on 2009 NAIP imagery, juniper encroachment is evident in portions of Pastures 4, 9, 11, and 19. The majority of juniper encroached areas exhibit Phase 1 characteristics, but there are areas of Phase 2 juniper stands within these pastures, which is affecting the sagebrush and bunchgrass plant communities in those areas. See Standard 4 for additional information.

The Nickel Creek FFR Allotment is managed as a native plant community and is not meeting Standard 4. Large stature perennial bunchgrasses have been reduced across the allotment and have been replaced by Sandberg bluegrass and/or cheatgrass. This vegetation community shift reduces effective nesting, escape, hiding, travel, and foraging cover values for wildlife species associated with sagebrush steppe communities. Juniper encroachment is likely not reducing habitat requirements for big game and other large animals, but is contributing to a reduction in habitat for sage-grouse and other sagebrush obligate species. The majority of this allotment is failing to provide suitable upland habitat conditions for sagebrush steppe-associated wildlife, including sage-grouse, and therefore is not meeting Standard 8 in upland habitats.

There is no indication of significant progress being made toward meeting Standard 8 in upland habitats because indicators of vegetation conditions are similar to the previous assessment with the exception of higher diversity and abundance of invasive annual grasses. While invasive plants do not dominate all plant communities within the allotment, they reduce effective nesting, escape, hiding, travel, and foraging cover values for wildlife species associated with sagebrush steppe communities. Current livestock grazing management does not appear to be a significant causal factor for not meeting Standard 8 because light perennial grass utilization levels (not exceeding 38% in data available from 2011-2012) (Table 3.4*)* under current management appear suitable to maintain native plant communities. The current grazing system conforms with the Idaho Guidelines for Livestock Grazing Management as it relates to Standard 8.

Significant causal factors for not meeting Standard 8 are historic livestock grazing and invasive plants. Historic grazing (over 50 years ago) presumably included growing season use and a higher intensity of use (overstocking) than current management, which led to the reduction/loss of large, palatable bunchgrasses. Invasive plants have increased, in part, due to the reduction in large bunchgrasses as a result of historic grazing practices. Invasive plants compete with native plants for water, nutrients, and light, precluding increases in desirable vegetation such as large bunchgrasses.

Riparian Wildlife Habitat

Previous 2003 Assessment

The 2003 Assessment described portions of Smith, Castle, and Deep Creeks located on public lands within pastures 6, 11, 19, and 21, totaling about 1.6 miles of stream. All segments that were evaluated for PFC were functioning at risk (FAR). Livestock use of riparian plant communities was the primary factor affecting the functioning condition of public land portions of Smith and Castle Creeks in the allotment. High sediment delivery and deposition from upstream segments was the primary factor for the FAR condition of Deep Creek in pasture 21.

Current Assessment

Two lotic PFC assessments were conducted in 2011 on a 0.32 mile segment of Castle Creek in Pasture 14 and a 0.40 mile segment of Smith Creek in Pasture 11. Both were rated as FAR with apparent upward trends. This upward trend was due to expanding riparian plant communities, adequate plant vigor, and minimal impacts from livestock such as hoof shearing, heavy woody browse use, or heavy livestock utilization. Young willows and mature sedges and rushes were observed along both stream reaches and plant vigor was appropriate for the site. Deeply entrenched channels, increased width-to-depth ratio, and excessive bedload (sediment) were also documented.

Beneficial uses for the reaches of Castle and Smith Creeks include cold water aquatic life and wildlife habitat. Beneficial uses for Deep Creek include cold water aquatic life, salmonid spawning, secondary contact recreation, and wildlife habitat. IDEQ identifies the reaches of Castle, Smith, and Deep Creeks as water quality limited and not fully supporting cold water aquatic life or salmonid spawning due to sedimentation and water temperature. Total Maximum Daily Loads (TMDLs) were developed for sediment and temperature on these reaches. Excess sediment and water temperature levels reduce habitat quality for Columbia spotted frogs, redband trout, and other riparian obligate wildlife species. Because these water quality

parameters are not being met, the allotment is not meeting Standard 8 for riparian wildlife habitat.

Significant progress toward meeting Standard 8, however, is indicated by recent improvements in the reaches of Castle and Smith Creeks. The 2003 Assessment rated these reaches as FAR, with no apparent trend. The 2011 PFC assessments rated both reaches as FAR with an apparent upward trend. Although PFC assessments do not directly assess riparian habitat suitability, stream-associated riparian areas that are in PFC generally provide adequate cover and other necessary riparian elements. While both reaches were not rated as PFC, improvements in functioning condition from FAR to FAR with an apparent upward trend does indicate significant progress toward meeting Standard 8.

Comparative photographs of the reach of Smith Creek taken during 1999 riparian inventory and 2011 PFC assessment monitoring also documents improvements in hydric vegetation along the length of the reach. Riparian vegetation (sedges, rushes, and young willows) is establishing on sand bars and bedload deposits in Smith Creek. Improvements in existing deep rooted riparian vegetation also indicate significant progress toward meeting Standard 8. Current livestock grazing management practices are not a significant causal factor for not meeting Standard 8 because little to no impact from livestock grazing was observed during field visits in 2011. The presence of dense herbaceous riparian vegetation with multiple age classes also indicates that current livestock grazing is not negatively impacting riparian vegetation along Smith and Castle Creeks. The current grazing system conforms with the Idaho Guidelines for Livestock Grazing Management as it relates to Standard 8 in riparian habitats

A significant causal factor for not meeting Standard 8 is that water quality parameters are not being met and cold water aquatic life is not fully supported in the reaches of Castle, Smith, and Deep Creeks due to sedimentation and water temperature.

Wildlife Species

Many wildlife species utilize a variety of habitats in the Nickel Creek FFR Allotment. These habitats provide forage, nesting substrate, and cover for various bird, mammal, amphibian, reptile, and fish species common to southwestern Idaho and the Northern Great Basin region. Although all of the species are important members of native communities and ecosystems, most are common and have wide distributions within the allotment, state, and region. Consequently, the relationship of most of these species to the permit renewal is not discussed here in the same depth as species upon which the BLM places management emphasis.

The BLM, USFWS, and IDFG maintain an active interest in other special status species that have no legal protection under the Endangered Species Act (ESA). BLM special status species are: 1) species listed or proposed for listing under the ESA, and 2) species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA (USDI-BLM 2008), which are designated as sensitive by the BLM State Director(s). Special status wildlife species discussed in this document include those listed on the Idaho BLM State Sensitive Species List (USDI BLM, 2003). Also considered are those species afforded protection under the Bald and Golden Eagle Protection Act (BGEPA) and the

Migratory Bird Treaty Act (MBTA) with potential to occur within the Nickel Creek FFR Allotment and whose habitat may be affected by grazing activities.

Although no threatened or endangered species listed under the ESA occur in the Nickel Creek FFR Allotment, three candidate species under consideration for listing were identified by the USFWS's Endangered Species Program (USDI-USFWS 2012) as potentially occurring within the allotment.

The USFWS has determined that greater sage-grouse, yellow-billed cuckoo, and Columbia spotted frogs warrant listing under ESA (i.e., candidate species) but listing has been precluded due to higher priority species. The Idaho BLM has determined that pygmy rabbit and Columbia River redband trout are imperiled globally and range-wide (i.e., BLM Type 2 sensitive species).

Other special status animal species, migratory birds, raptors, and species of socioeconomic importance (e.g., big game) will be included in a general discussion by taxonomic groupings. Description of the current condition of species and their habitats are based on the 2003 and 2013 Determinations (Appendix A), personal observation, and consultation with local wildlife professionals.

Only a few focal special status animal species will be discussed in detail individually. Focal species define landscape characteristics necessary for functional and healthy ecosystems. These species include the greater sage-grouse, yellow-billed cuckoo, Columbia spotted frog, pygmy rabbit, and Columbia River redband trout. For example, because they are so dependent on healthy sagebrush communities, sage-grouse and pygmy rabbits are appropriate species to use as surrogates for other sagebrush associated wildlife, while spotted frogs and redband trout serve as surrogates for riparian and aquatic wildlife species and the general health of lentic and lotic systems (Caro & O'Doherty, 2001).

Common and scientific names of special status wildlife species, their status, and occurrence potential within the allotment are presented in Appendix F.

Focal Special Status Animal Species

Greater Sage-grouse

The greater sage-grouse (*Centrocercus urophasianus,* hereafter; sage-grouse) is a sagebrush-obligate bird species that requires large areas of relatively undisturbed sagebrush steppe habitat. Sage-grouse were once abundant and associated with sagebrush steppe ecosystems across western North America; currently, their distribution has been reduced to nearly half of what it was historically. Despite long-term population declines, sage-grouse persist across more than 250,000 square miles of the sagebrush ecosystem (Schroeder, et al., 2004). Within this requisite sagebrush landscape, important seasonal habitats (e.g., wet meadows, higher elevation mesic shrublands) are also necessary (Connelly, Schroeder, Sands, & Braun, 2000).

Because sage-grouse are still broadly distributed, dependent on a diversity of heterogeneous seasonal habitats, and some populations are wide-ranging, they are expected to be vulnerable to changes to the sagebrush ecosystem. In addition, the maintenance of viable sage-grouse

populations is of special concern to state and federal resource managers across the species' present range, and their persistence is important in the socio-political, economic, and environmental realms (Sands & Smurthwaite, 1992). On March 23, 2010, the USFWS submitted a new finding to the Federal Register that listing the sage-grouse was warranted but precluded by the need to take action on other species facing more immediate and severe extinction threats (USDI-USFWS 2010a). The finding has changed the status of sage-grouse from a BLM Type 2 sensitive species to a candidate species under the ESA (BLM Type 1).

In March 2010, BLM Washington Office Instruction Memorandum (IM) 2010-071 directed field office managers to implement appropriate conservation actions in priority sage-grouse habitat. Subsequent guidance (Washington Office IM 2012-043) provided interim conservation measures for use within preliminary priority habitat (PPH) and preliminary general habitat (PGH) areas, while BLM is amending land use plans. PPH is defined as areas having the highest conservation value to maintaining sage-grouse populations; PGH is defined as areas of occupied seasonal or year-round habitat outside of priority habitat.

The Nickel Creek FFR Allotment is located in the Western Association of Fish and Wildlife Management Agencies' (WAFWA) Snake River Plain Management Zone (Zone IV; (Stiver, Rinkes, & Naugle, 2010)). The Northern Great Basin sage-grouse population within Zone IV (Garton, et al., 2011) is a large population in Nevada, southeast Oregon, southwest Idaho, and northwest Utah. Of the three subpopulations identified Connelly et al. (2004) within the Northern Great Basin population, the north-central Central Nevada/southeast Oregon/southwest Idaho (hereafter Owyhee) subpopulation overlaps the Nickel Creek FFR Allotment.

Generally, habitat conditions have deteriorated or have been altered to some degree throughout the entire distribution of sage-grouse. This has caused local extirpations or declines in sage-grouse populations throughout their historical range and in the Nickel Creek FFR Allotment and surrounding area. Population analyses were completed by Connelly et al. (2004) and Garton et al. (2011). Connelly et al. (2004) conducted a population analysis by state and not by management zone, population, or subpopulation; annual rates of change for sage-grouse in Idaho suggest a long-term decline. More recently, Garton et al. (2011) conducted a population analysis of the Northern Great Basin population based on data from 1965 to 2007. During the assessment period between 1965 and 2007, the proportion of active leks and the average number of males per active lek declined. Although the Garton et al. analysis is more detailed than the Connelly et al. (2004) analysis, both indicated similar trends for sage-grouse populations in Zone IV.

Historically, the Nickel Creek FFR Allotment provided suitable habitat for sage-grouse and the area may have supported significant populations (USDI-USFWS 2013). Currently, the majority of the allotment and surrounding areas are still providing suitable to marginal sage-grouse habitat. Based on an interim, updated (2013) version of the Idaho Sage-grouse Habitat Planning Map (ISHPM) completed by the Idaho Sage-grouse Advisory Committee (ISAC) (2006), approximately 60% (1,162 acres) of BLM land within the Nickel Creek FFR Allotment is currently classified as key sage-grouse habitat, and 38% (749 acres) is classified as conifer encroachment areas with high restoration potential (Figure 3.6, **Table 3.7**). The remaining 2% (35 acres) of the Nickel Creek FFR Allotment is not considered sage-grouse habitat. Makela and Major (2012) identified approximately 23% (452 acres) of

BLM lands within the Nickel Creek FFR Allotment as PGH and 77% (1,484 acres) as PPH. The habitat identified as PPH was further classified as 59% sagebrush and 41% conifer encroachment areas (Figure 3.7).

Table 3.7 – Sage-grouse habitat acreage on BLM lands within the Nickel Creek FFR Allotment

	Idaho Sage-grouse Habitat Planning Map				PPH/PGH Version 2	
Pasture	Sagebrush	Perennial Grassland	Conifer Encroachment	Total	PGH	PPH
4	42	0	61	103	123	0
6	13	0	34	47	47	0
9	4	0	110	114	119	0
11	276	0	221	497	163	334
14	150	0	323	473	0	473
19	287	0	0	287	0	287
21	105	0	0	105	0	105
23	51	0	0	51	0	51
24	43	0	0	43	0	43
25	191	0	0	191	0	191
Total	**1,162**	**0**	**749**	**1,911**	**452**	**1,484**

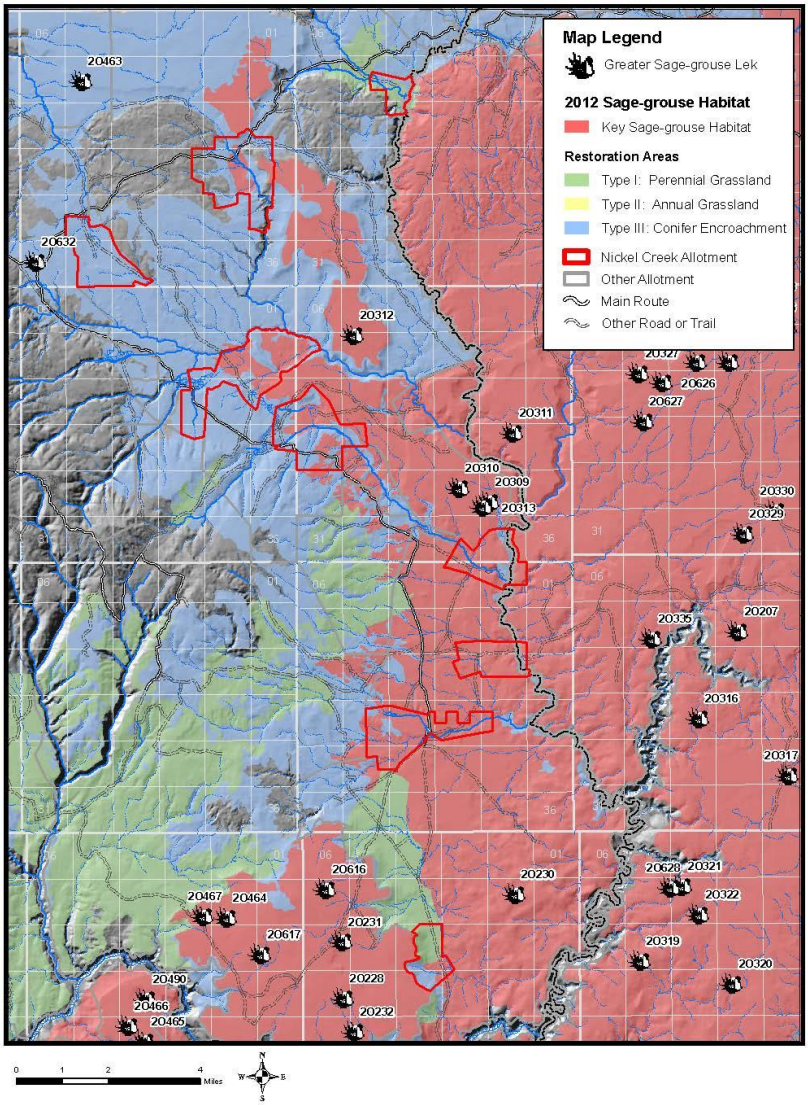

Figure 3.6 - 2012 Key Sage-grouse habitat within the Nickel Creek FFR Allotment and surrounding area

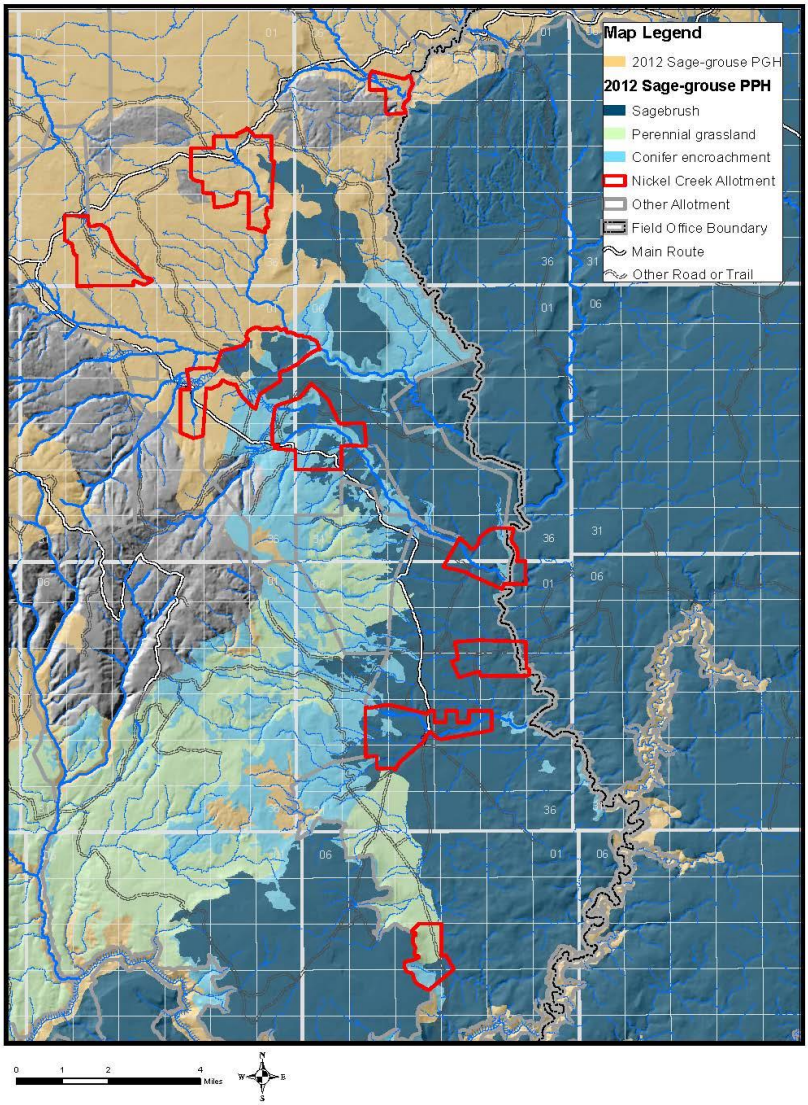

Figure 3.7 - 2012 Sage-grouse PPH/PGH within the Nickel Creek FFR Allotment and surrounding area

Typically, sage-grouse in the vicinity of the Nickel Creek FFR Allotment congregate on communal strutting grounds (leks) from April to early May. The nesting season occurs soon after, extending from May to late June. Broods remain with females for several more months as they move from early brood-rearing areas (e.g., forb- and insect-rich upland areas surrounding nest sites) to late brood-rearing and summer habitats (e.g., wet meadows and riparian areas) from June to August. Based on locations acquired through lek surveys, telemetry studies, and incidental observations, sage-grouse nesting, early and late brood-rearing, and winter habitats currently occur within the Nickel Creek FFR Allotment and surrounding areas to varying degrees.

As discussed above, approximately 98% of the Nickel Creek FFR Allotment is classified as key sage-grouse habitat (ISAC 2006) and 100% of the allotment is classified as either PPH or PGH (Makela & Major, 2012). Currently, due to their proximity to active leks and a general lack of juniper encroachment, the southern pastures of the Nickel Creek FFR Allotment (Pastures 11-25)

are likely providing the most suitable sage-grouse habitat (Figure 3.6). Due primarily to Western juniper encroachment, distance from active leks, and anthropogenic disturbance, habitat within the remainder of the allotment (i.e., Pastures 4, 6, and 9) is generally providing unsuitable habitat for sage-grouse (
Table 3.7). Habitat within Pastures 4, 6, and 9 is characterized by rough, juniper covered terrain, mixed with lower elevation privately owned sub-irrigated pasture. The juniper encroached areas within these pastures are rated as having a high restoration potential and could provide suitable sage-grouse habitat if treated. However, the occurrence of sage-grouse within these pastures would still likely be limited due to their distance from active leks.

Based on an interim, updated (2012) version of the BLM's sage-grouse Landscape Importance Model (LIM), lands within the Nickel Creek FFR Allotment are currently classified as areas of lowest to highest relative importance to sage-grouse. The LIM is based on a combination of breeding bird density (lek density and attendance), lek connectivity, and population persistence models. The intent of the LIM is to provide an index of the relative importance of areas within PPH and PGH across Zone IV. Generally, the northern pastures of the allotment (Pastures 4, 6, 9, and 11) are rated as lowest to low-moderate importance due primarily to low persistence of sagebrush resulting from Western juniper encroachment and distance from active leks. The central and southern pastures of the allotment (14, 19, 21, 23, 24, and 25) are rated as moderate to highest importance due primarily to high sagebrush persistence values resulting from a general lack of juniper encroachment and close proximity to active leks.

The Conservation Plan for Greater Sage-grouse in Idaho (ISAC 2006) identifies juniper encroachment as a serious threat to sage-grouse habitat. Sage-grouse use in areas occupied by Western juniper is limited due to the increased predation risk trees impart (trees provide perches and cover for avian and terrestrial predators). Restoration of sage-grouse breeding habitat within portions of these pastures may require a considerable amount of time, as recovery of the sagebrush community and decay of the juniper snags is estimated to take from 35 to 200 years (Baker, 2006; Huffman, Crouse, Chancellor, & Fulé, 2012).

Pre-2003 livestock grazing practices in the Nickel Creek FFR Allotment have also limited sage-grouse use in some areas because heavy livestock utilization likely caused shifts in vegetation functional-structural groups which resulted in the underrepresentation of dominant bunchgrass species and an overrepresentation of shallow-rooted, short-statured Sandberg bluegrass. This shift in vegetation functional-structural groups can reduce suitable breeding habitat, protective cover, and foraging areas for sage-grouse. Assessed riparian and wetland areas within the Nickel Creek FFR Allotment that sage-grouse could potentially use as late brood-rearing and summer habitat are currently identified as functional at-risk with apparent upward trend.

In 2012, three sage-grouse habitat assessments were conducted within the Nickel Creek FFR Allotment. Pasture 11 was documented to have suitable (necessary food/cover indicators are present) habitat conditions. However, habitat assessments conducted in Pastures 21 and 25 documented marginal (missing some necessary indicators) and unsuitable (missing the majority of necessary indicators) conditions due to forb scarcity, lack of perennial grass height and cover, sagebrush growth form, and invasive weeds.

Sage-grouse have been shown to select brood-rearing habitat with taller grasses and increased herbaceous cover; increased herbaceous biomass is correlated with invertebrate prey abundance, and the increased vertical and horizontal cover it affords greater protection from predators, both of which could increase juvenile survival (Kaczor, et al., 2011). No assessments of late brood-rearing habitat are known to have been conducted within the Nickel Creek FFR Allotment. However, stream segments in Pastures 11 and 19 were assessed in 2011 as FAR with apparent upward trend and are likely providing marginal to suitable sage-grouse late brood-rearing habitat.

No known leks occur within the Nickel Creek FFR Allotment (Table 3.8). The allotment is located within the 75% breeding bird density (BBD) buffer (4 miles) of eight occupied leks (based on the presence of 2 or more males observed during surveys in the last five years) and eleven undetermined leks within Idaho. The 75 % BBD buffer is highly correlated to breeding habitat surrounding leks and encapsulates 75% of male lek attendance along with 60% of currently occupied habitat within Zone IV (Makela & Major, 2012). The remaining 40% of currently occupied habitat (which occurs outside the 75% BBD) is likely the more fragmented habitat (Doherty et al., 2011). Because counts at these leks have only recently been conducted with any annual regularity via helicopter, long-term trends in lek attendance are difficult to extrapolate.

Table 3.8 - Attendance at leks within 4 miles of the Nickel Creek FFR Allotment, 2007-2012

Lek	Location	Survey Year[1]					
		2007	2008	2009	2010	2011	2012
2O660	< 4.0 miles E of Pasture 6	--	0	--	6	8	--
2O632	< 4.0 miles E of Pasture 6	--	0	--	0	--	--
2O463	< 3.0 miles NW of Pasture 4	--	0	--	--	0	--
2O632	< 1.0 miles W of Pasture 9	--	--	--	0	0	0
2O312	< 1.0 miles E of Pasture 11	0	--	--	--	26	10
2O311	< 3.5 miles E of Pasture 14	--	--	--	0	--	0
2O310	< 1.5 mile N of Pasture 19	23	--	--	80	76	70
2O313	< 1.5 miles N of Pasture 19	0	--	--	--	--	--
2O309	< 1.5 miles N of Pasture 19	0	--	--	--	--	--
2O335	< 3.0 miles E of Pasture 21	--	2	--	0	--	49
2O316	< 4.0 miles SE of Pasture 21	--	2	--	0	--	0
2O230	< 2.0 miles NE of Pasture 25	0	--	--	--	3	0
2O616	< 2.5 miles NW of Pasture 25	0	--	--	--	--	--
2O464	< 4.0 miles W of pasture 25	0	--	--	--	--	--
2O231	< 2.0 miles W of Pasture 25	0	--	--	--	--	--
2O617	< 3.5 miles W of Pasture 25	24	--	14	6	58	43
2O228	< 1.5 miles SW of Pasture 25	16	--	--	51	35	41
2O232	< 2.0 miles SW of Pasture 25	0	--	--	--	--	0

Lek	Location	Survey Year[1]					
		2007	2008	2009	2010	2011	2012
2O462	< 4.0 miles SW of Pasture 25	0	--	--	--	--	--

1 Surveys were not conducted in years indicated by dashes (--).

Yellow-billed Cuckoo

The yellow-billed cuckoo (*Coccyzus americanus*) is a riparian-obligate bird species usually found in large tracts of cottonwood and dense willow habitat. In southwestern Idaho, the yellow-billed cuckoo has been considered a rare, sometimes erratic, visitor and breeder in the Snake River valley. The breeding population in Idaho is likely limited to a few breeding pairs at most (USDI USFWS, 2011a).

Yellow-billed cuckoo nesting habitat is described as large stands of cottonwood/willow over-story with a dense understory of shrubs (USDI-USFWS 2011a). There is no habitat within the Nickel Creek FFR Allotment that meets this description. The majority of riparian habitat within the allotment is currently in an early seral state (see Section 3.2.1), and is likely precluding the presence of this species within the allotment. Cottonwoods could potentially be supported in parts of Nickel and Deep Creeks. However, no known cottonwood stands currently occur within the allotment and it would take decades to produce suitable cuckoo habitat under ideal conditions. In addition, the majority of perennial streams where cottonwoods would occur lack the extensive sandy floodplains mature cottonwood groves require for development. Due to these factors, the yellow-billed cuckoo will not be addressed further in this EA.

Columbia Spotted Frog

The Great Basin Distinct Population Segment (DPS) of the Columbia spotted frog (*Rana luteiventris*) occurs in eastern Oregon, southwestern Idaho, and northern Nevada. Columbia spotted frogs are highly aquatic and are seldom found far from water. The largest populations occur in structurally complex wetlands with diverse pool and meadow components. Suitable sites contain shallow breeding pools and deeper water overwintering sites. Wet meadows, riparian wetlands, and stream courses are important as dispersal corridors among perennially occupied sites. Wetland and riparian habitat loss and degradation are the most serious threats to the maintenance of viable populations of spotted frogs. Currently, spotted frogs are widely distributed throughout southwestern Idaho and eastern Oregon, but local populations appear to be isolated from each other by either natural or human induced habitat disruptions (USDI-USFWS 2011b).

Occurrence information available from IDFG documents six spotted frog observations on tributaries of the East Fork of Pleasant Valley Creek within Pasture 9, two observations on Smith Creek in Pasture 11, and three observations on Beaver Creek in Pasture 23 of the Nickel Creek FFR Allotment. Spotted frogs have also been documented on Stoneman, Current, and Deep Creeks approx. 0.5 miles upstream from Pasture 6, Nickel Creek approx. 0.2 miles downstream from Pasture 4, and Castle Creek approx. 0.1 miles upstream from Pasture 19 (Figure 3.8). The majority of wetland and riparian areas in the allotment lack mature woody riparian vegetation,

are water quality limited, and are likely only providing unsuitable to marginal habitat for the maintenance of viable populations (Section 3.2.1).

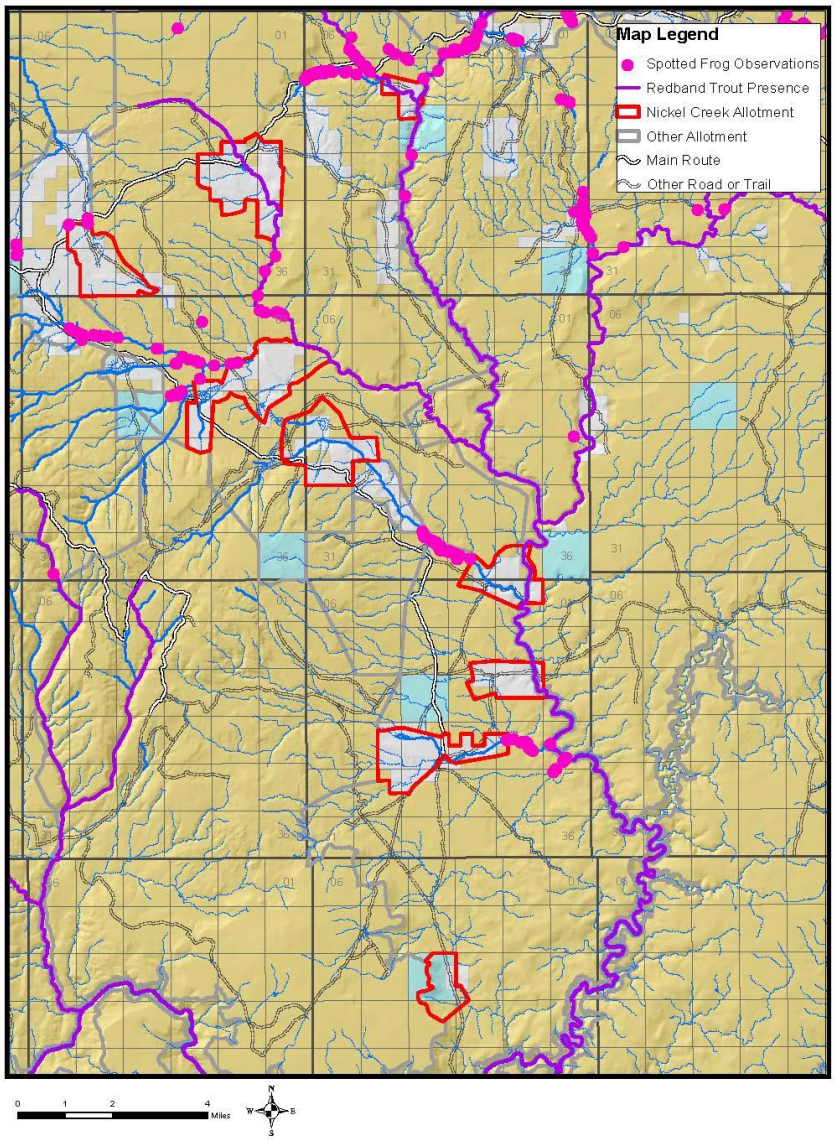

Figure 3.8 - Columbia spotted frog and redband trout occurrence locations within the Nickel Creek FFR Allotment and surrounding areas

Pygmy Rabbit

The pygmy rabbit (*Brachylagus idahoensis*) is a sagebrush-obligate species that requires tall stands of big sagebrush on deep, friable soils where they dig extensive burrow systems. These dense sagebrush habitats provide food and shelter throughout the year. During winter, pygmy rabbits are almost entirely dependent on sagebrush for food. Fragmentation of sagebrush habitats poses a threat to this species by isolating disjunct populations, increasing susceptibility to localized threats, and reducing gene flow among populations. Habitat loss and fragmentation due to conversion of sagebrush to agriculture, wildfire, invasive plants, and conifer

encroachment have been identified as some of the primary threats to pygmy rabbit populations (IDFG 2005b).
A coarse-level predictive occurrence model created by Idaho BLM in 2009 suggests that portions of all pastures within the Nickel Creek FFR Allotment have a moderate likelihood of pygmy rabbit habitat occurrence. However, habitat in the majority of the allotment is unsuitable for pygmy rabbits; only 22% of the allotment is classified as having the appropriate cover type the species prefers (i.e., big sagebrush). Ecological sites associated with soils suitable for pygmy rabbit habitat (i.e., Dry Meadow PONE3-PHAL2 and Loamy 13-16" ARTRV/PSSPS-FEID) occur in Pastures 4, 6, 9, 11, and 14 on predominantly private land. Suitable sagebrush habitat in these pastures is now mostly absent, having been converted to sub-irrigated pasture or dominated by juniper. No pygmy rabbit surveys or observations have been documented within the allotment.

Columbia River Redband Trout
The Columbia River redband trout (*Oncorhynchus mykiss gairdneri*) is the resident form of steelhead trout that historically returned from the ocean to spawn in streams throughout the Owyhee River watershed (now restricted by downstream dams). In the Owyhee Uplands, redband trout prefer cool streams with temperatures below 70° F (21° C). However, they can survive daily cyclic temperatures up to 80° F (27° C) for a short period of time (IDFG 2005c). Habitat loss and fragmentation of currently occupied habitat are among the major threats identified as issues relevant to the maintenance of viable populations of redband trout.

Within the Nickel Creek FFR Allotment, occurrence information available from IDFG documents redband trout in Current and Stoneman Creeks which transect Pasture 6, Deep Creek which forms portions of the boundary of Pasture 6 and transects Pasture 21, Nickel Creek which transects Pasture 4 and forms portions of the boundary of Pastures 4 and 11, Smith Creek which transects and forms portions of the boundary of Pasture 11, Castle Creek which transects Pasture 19, and Beaver Creek which transects portions of Pastures 23 and 24 (Figure 3.8). The IDEQ identified Deep, Nickel, and Smith Creeks as not fully supporting cold water aquatic life and salmonid spawning beneficial uses, and Castle Creek was not fully supporting cold water aquatic life beneficial use. Redband trout are not known to occupy the intermittent and ephemeral streams within the remaining pastures. Overall, habitat for redband trout is degraded due to the effects of past land use practices in riparian areas, adjacent upstream grazing allotments, and private lands.

Migratory Birds, Raptors, and other Birds (including Special Status Species)
A variety of special status bird species occur or are likely to occur within the Nickel Creek FFR Allotment (Appendix F). The majority of these species are associated with shrub steppe, grassland, or riparian habitats. Further consideration is given to avian species afforded special management emphasis under the Migratory Bird Treaty Act (U.S.C. 1936). As of 2010, under a signed Memorandum of Understanding with the USFWS, the BLM has a responsibility to "as practical, protect, restore, and conserve habitat of migratory birds, addressing the responsibilities in Executive Order 13186" (USDI 2010). The Nickel Creek FFR Allotment may provide foraging and nesting habitat for up to 177 additional species of migratory birds (Appendix G).

The nesting requirements of many migratory birds are fulfilled within the Nickel Creek FFR Allotment from late-April to mid-July and/or during spring and fall migrations. While some migratory bird species use a wide variety of habitats, others are more specialized. Grasslands and shrub steppe environments provide nesting and foraging habitat for the majority of migratory bird species found within the Nickel Creek FFR Allotment. Most of these ground nesting or shrub-dependent species rely on the vegetative structure and cover found in these habitat types for successful breeding. Among birds, grassland and shrubland species are declining faster than any other group of species in North America (Dobkin & Sauder, 2004).

Juniper woodland habitat that currently occupies ecological sites in Pastures 4, 9, 11, and 14 that would otherwise be dominated by expected sagebrush habitats has augmented the population of woodland birds that would be only a minor component of the area's overall bird community.

Junipers and aspen provide nesting and foraging substrate for foliage and bark gleaning species such as black-throated gray and yellow-rumped warblers, mountain bluebird, Townsend's solitaire, hairy woodpecker, and red-naped sapsucker. Ground gleaning species within woodland habitats include American robin, black-billed magpie, chipping sparrow, and dark-eyed junco. In addition, juniper woodlands provide habitat for owl and raptor species such as flammulated owl, long-eared owl, northern saw-whet owl, northern goshawk, and red-tailed hawk. Red-tailed hawk nests are common in the area's aspen stands and several northern goshawk nesting areas with multiple nest sites have been documented within four miles of the allotment. All nests were constructed within mature, large aspens.

Riparian habitats support the most diverse migratory bird communities in the arid and semiarid portions of the Intermountain West (Knopf, Johnson, Rich, & Samson, 1988). In addition, healthy riparian areas sustain high densities of breeding migratory birds (Mosconi & Hutto, 1982). In Idaho, 60 percent of migratory landbirds are associated with riparian habitats (IDFG 1992), and one of the main reasons for the decline of migratory landbirds is the loss of riparian habitat (DeSante & George, 1994).

Riparian habitat along the perennial streams in the area hosts a variety of obligate and dependent bird species. Riparian-obligate species, like yellow warbler, and dependent species such as black-capped chickadee, black-headed grosbeak, house wren, and warbling vireo have been documented in the area. These species prefer the structural diversity found in riparian areas with aspen and willow canopies and herbaceous understories along streambanks. The absence of disturbance associated with livestock grazing within these riparian communities has been demonstrated to result in high-quality breeding habitat (i.e., high nest success, low brood parasitism rates) for many of these species (Heltzel & Earnst, 2006).

The varied mountain shrub communities that integrate with open woodlands and sagebrush steppe provide breeding and foraging habitat and cover for aerial, bark, and foliage gleaners such as ash-throated and gray flycatchers, Brewer's blackbird, common poorwill, and northern flicker. Ground foraging species in these habitats include green-tailed towhee, mourning dove, Cassin's and house finches, and lark and white-crowned sparrows. Maintaining adequate amounts of the different successional states along the shrub steppe to juniper woodland gradient is important in preserving bird species diversity throughout these habitat types (Reinkensmeyer, Miller,

Anthony, & Marr, 2007). Several species that also favor these habitats but negatively affect local migratory bird populations through brood parasitism or usurpation of nesting cavities include the brown-headed cowbird and the invasive European starling.

Shrub steppe habitats dominated by several species of sagebrush and perennial grasslands provide vital nesting and foraging habitat for obligate species such Brewer's and sage sparrows and dependent species including loggerhead shrike and sage thrasher. Direct loss, fragmentation, and degradation of sagebrush habitats connected with the spread of invasive plants, altered disturbance regimes, and the associated state transitions away from stable native vegetation communities are important factors affecting long-term and regional population dynamics of these species (Knick & Rotenberry, 1995; Knick & Rotenberry, 2000; Knick, et al., 2003;; Knick, Holmes, & Miller, 2005). Passerine species like vesper sparrow, horned lark, western meadowlark, and rock wren, and raptors such as golden eagle, prairie falcon, ferruginous and rough-legged hawks, and burrowing and short-eared owls have also been documented in the area's shrub steppe vegetation communities.

Although limited in number, ponds provide foraging habitat for killdeer, spotted sandpiper, Wilson's phalarope, and white-faced ibis. Wetlands and wet meadows provide nesting substrate and cover for red-winged blackbird, song sparrow, and Wilson's snipe. In addition, open wetlands with abundant flying insects are important foraging areas for aerial foragers such as barn, tree, and violet-green swallows. Raptor species associated with water such as bald eagles, osprey, and peregrine falcons have been documented in the area during migration and winter months. Although bald eagles have been documented near the allotment during winter months, their use of the area is not well known. Bald eagle breeding within the Nickel Creek FFR Allotment is highly improbable because of the lack of open water and nesting trees.

Big Game and other Mammals (including Special Status Species)

Several special status mammal species have been documented or have the potential to occur within the Nickel Creek FFR Allotment (Appendix F). California bighorn sheep (*Ovis canadensis californiana*) inhabit the deep, rugged canyons of the Owyhee River system year round (Figure 3.9). Although bighorn sheep forage in adjacent uplands, up to a mile from canyon rims, they prefer the benches and terraces within rugged canyons where escape terrain is readily available. In recent years, the local population (Owyhee River population management unit [PMU]) of approximately 250 to 350 California bighorn sheep has remained relatively stable (IDFG 2010a). The overall management goal for the Owyhee River PMU is to maintain or increase the current population; IDFG estimates the PMU is capable of supporting 400 to 700 sheep (IDFG 2010a).

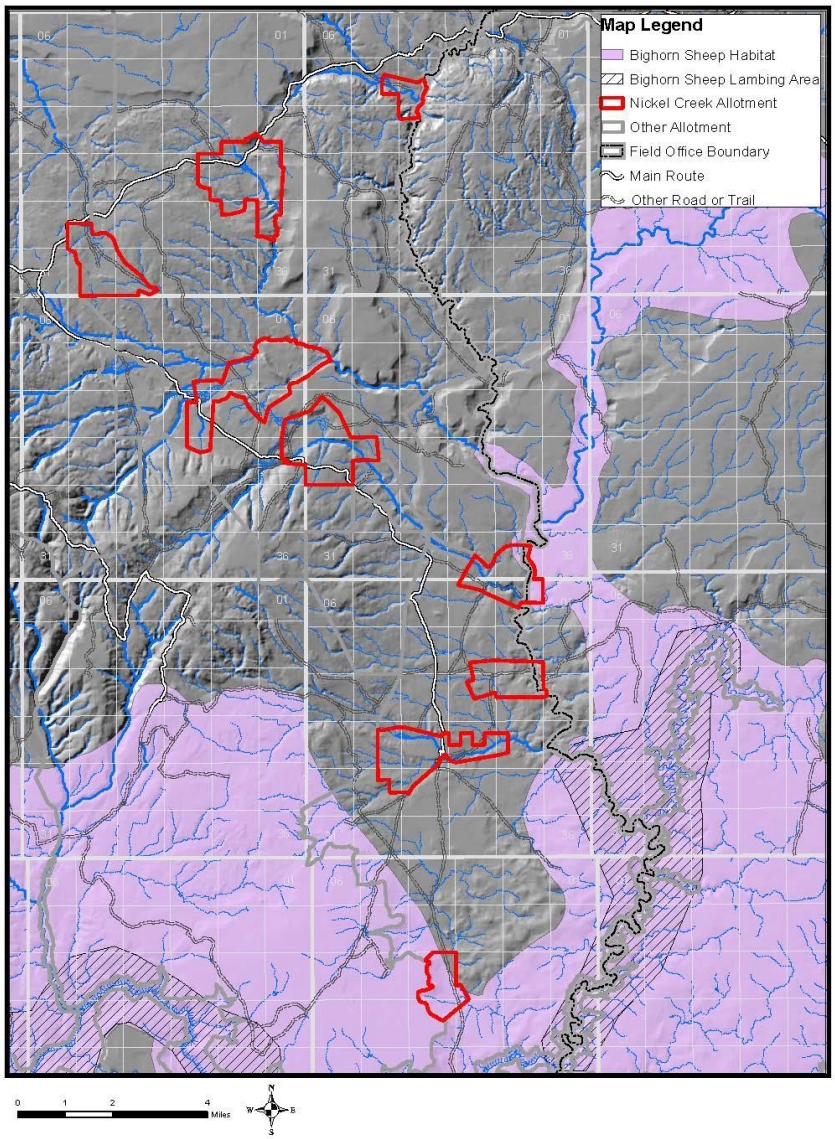

Figure 3.9 - Bighorn sheep habitat within the Nickel Creek FFR Allotment and surrounding areas

A small portion (~ 40 acres) of the Owyhee River Bighorn Sheep Habitat Area of Critical Environmental Concern (ACEC) is within the Owyhee River Wilderness in Pasture 25. This ACEC was established to protect and enhance habitat for bighorn sheep, to maintain or improve the habitat to at least a good range condition class, and to protect and maintain the scenic and natural values present in the area (ORMP p 81). However, based on occurrence records, it does not appear that bighorn sheep have made use of this part of the allotment historically.

Special status bat species occurring or potentially occurring within the Nickel Creek FFR Allotment include fringed myotis (*Myotis thysanodes*), California myotis (*Myotis californicus*), spotted bat (*Euderma maculatum*), and Townsend's big-eared bat (*Corynorhinus townsendii*). Because the effects of livestock grazing on bats are not well known and no changes to roosting habitat are expected, effects to bats are expected to be negligible and will not be discussed further.

Although the geographic distributions and preferred habitats of several other special status mammal species including the dark kangaroo mouse (*Microdipodops megacephalus*) and Wyoming ground squirrel (*Spermophilus elegans nevadensis*) occur in the area, the Nickel Creek FFR Allotment is located in the northern extent of their ranges and occurrences within suitable lower elevation habitats are probably inhibited by the east-west trending Owyhee River canyon.

The Nickel Creek FFR Allotment has long supported populations of a wide variety of big game species. Rocky Mountain elk (*Cervus canadensis*), mule deer (*Odocoileus hemionus*), and pronghorn (*Antilocapra americana*) use portions of the area yearlong (Figure 3.10). Most elk and mule deer north of the Owyhee River probably migrate to lower elevations in Oregon for winter, while elk and mule deer south of the Owyhee River either remain in the area or move into Nevada (IDFG 2010b; IDFG 2010c). Nevertheless, mule deer are common year-round in the uplands and canyonlands within the allotment. The area has traditionally yielded large, highly prized elk bulls during the very limited annual hunt (IDFG 2010b).

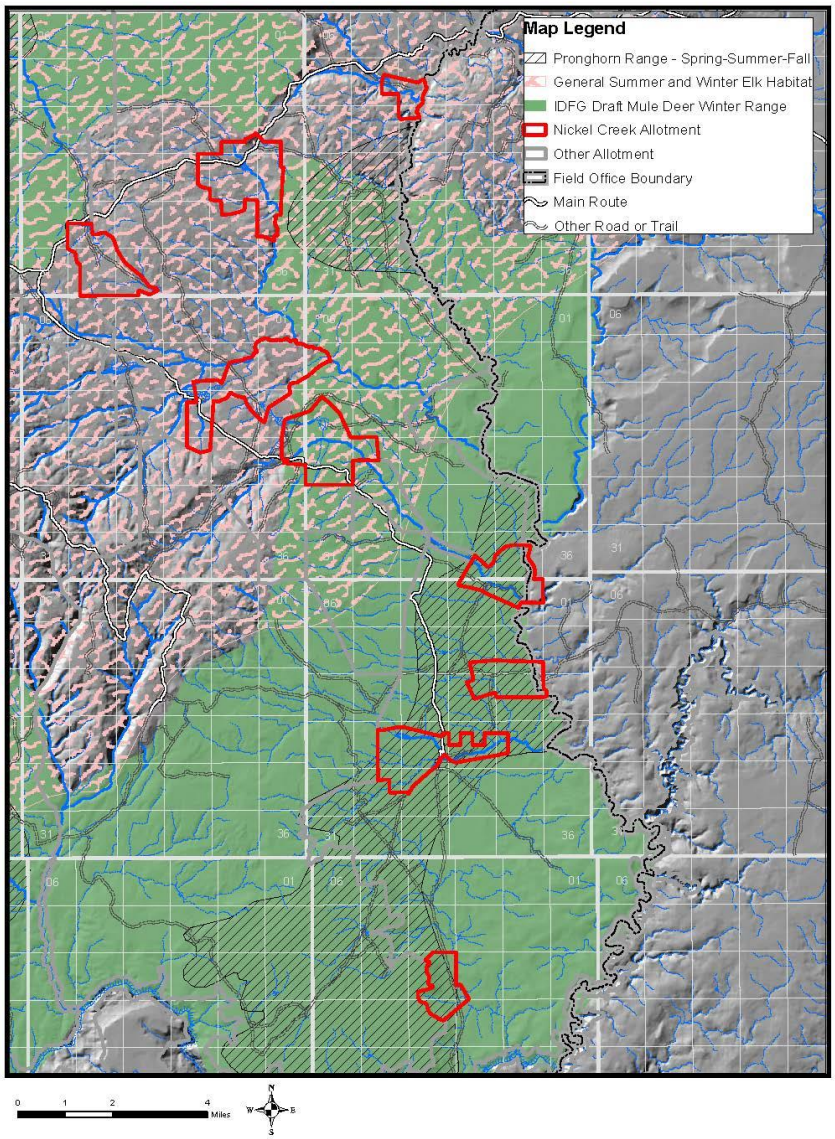

Figure 3.10 - Big game habitat within the Nickel Creek FFR Allotment and surrounding areas

While Western juniper does provide hiding and thermal cover for elk and deer, western juniper encroachment reduces forage and habitat diversity. Browse species important to deer, such as mountain big sagebrush and bitterbrush have decreased in juniper encroachment areas.

Pronghorn probably used the entire Juniper Mountain area when vegetation consisted mainly of open grassland and shrubs; however, pronghorn use has currently been reduced due to the increase in Western juniper woodlands. Pronghorn population declines were noted in the 1969 Juniper Mountain Wildlife Habitat Plan (JMWHP) (USDI-BLM 1969). The JMWHP documents degraded range conditions and forage competition as the reasons for pronghorn decline.

The Nickel Creek FFR Allotment is located within the IDFG game management unit (GMU) 42. Current population data for elk and mule deer are lacking because surveys have not been conducted within the GMU for several decades (IDFG 2000a; IDFG 2000b). Nevertheless,

IDFG estimated the 2002 population at approximately 450 elk within GMU 42; population objectives within GMU 42 are 190 to 275 elk (IDFG 2010b). IDFG does not have any current population estimates for mule deer in GMU 42; managers have identified population information within the GMU as a primary data need in the future (IDFG 2010c). The IDFG objective for mule deer within GMU 42 is to increase populations within these important herds (IDFG 2010c). Pronghorn surveys were conducted in GMU 42 in 2009; more than 1,500 pronghorn were observed (IDFG 2010d). Besides maintaining a variety of hunting opportunities and average horn lengths, IDFG has no explicit population objectives for pronghorn within GMU 42 (IDFG 2010d).

Large predators that occur within the allotments include bobcat (*Lynx rufus*), coyote (*Canis latrans*), and mountain lion (*Puma concolor*). These predators are quite secretive and elusive. Because of their secretive nature, predator densities are difficult to determine. However, predators are closely tied to their prey, and if prey numbers are low, predator numbers would reflect that. Because these species are relatively common and abundant habitat exists in the area, they will not be discussed further.

Beaver (*Castor canadensis*) are not as widespread throughout the area as they once were. The JMWHP identified that limited populations of beaver were present along some of the streams in the area (USDI BLM 1969). However, habitat along many of the streams had deteriorated to the point that only remnant populations remain. Habitat for beavers in the Nickel Creek FFR Allotment has been affected by past livestock use and encroachment of juniper. Loss of aspen, cottonwood, and willow trees has affected beaver by reducing suitable forage and material for building dams to create pond habitat. The loss of beavers throughout much of the area is suspected of leading to declines in spotted frog numbers.

Other common fur-bearing animals including badger, fox, muskrat, otter, raccoon, skunk, and weasel are widespread and relatively common in the region and will not be discussed further.

Amphibians and Reptiles (including Special Status Species)

Several special status amphibians and reptiles, including the northern leopard frog (*Rana pipiens*), western toad (*Bufo boreas*), Woodhouse's toad (*Bufo woodhousii*) and common garter snake (*Thamnophis sirtalis*), have the potential to occur within the Nickel Creek FFR Allotment (Appendix F). All four species prefer habitats in proximity to water, including springs, streams, wetlands, and meadows. Loss and degradation of riparian/wetland habitats are the most serious threats to the maintenance of viable populations of these species. Because very little is known about amphibian (with the exception of spotted frogs) and reptile populations in the Nickel Creek FFR Allotment, individual species will not be discussed in detail further. Amphibian and reptile habitat in general will be included in discussions under spotted frogs and in the broader context of upland and riparian habitat conditions.

Fisheries (including Special Status Species)

One species of freshwater mussel with special status, the California floater (*Anodonta californiensis*), has been documented approximately 20 miles north of the allotment in Jordan Creek. This species typically inhabits shallow water in low elevation lakes, rivers, and streams and has the potential to occur in the North and Middle Fork Owyhee Rivers and Deep Creek.

Besides redband trout, other fish species that occur or potentially occur within streams in the Nickel Creek FFR Allotment include smallmouth bass (*Micropterus dolomieui*), dace (*Rhinichthys* spp.), redside shiner (*Richardsonius bateatus*), sculpin (*Cottus* spp.) and suckers (*Catostomus* spp.) (IDEQ 2002; IDFG 2007). Some or all of these species have been documented within the North Fork Owyhee River and have a high probability of occurrence within Deep Creek and other perennial streams. Riparian conditions and activities in the upper reaches of streams also influence fish and fish habitat downstream of the allotment boundaries. These species will not be discussed further, as fish habitat in general will be included in detailed discussions under redband trout.

3.3.2 Environmental Consequences - Fish and Wildlife/Special Status Animals

3.3.2.1 Alternative A

Current livestock grazing management is not identified to be a significant causal factor for not meeting the Standard for threatened and endangered animals (Standard 8). Implementation of Alternative A (continuation of current grazing management) would still not meet or make significant progress toward meeting Standard 8 because the causal factors (soil loss, past livestock grazing, and invasive plants) would still affect upland wildlife habitat over the term of the permit. However, current management was not identified as a causal factor for the non-attainment of Standard 8, so Alternative A would not cause the allotment to not meet Standard A. Upland wildlife habitat would be expected to be maintained in its current condition, which is currently not providing adequate resources (nesting cover, foraging cover, forage production) for some special status species in some pastures.

Alternative A is expected (but not limited) to result in no more than 40% upland utilization, as has occurred under recent management (Table 3.4). This level of utilization appears to be appropriate for maintaining the current condition of upland wildlife habitat in the Nickel Creek FFR Allotment. As identified in the 2013 Determination, this grazing intensity and management would generally maintain perennial bunchgrass vigor and was not determined to be a causal factor for not meeting or making significant progress toward meeting Standard 8.

In Alternative A, pasture rotations and duration would be as shown in Table 2.3. Alternative A does not include a full year of rest for any pasture. However, some fields have deferred use (summer or fall rather than spring), which provides for a mosaic of seasonal use across the landscape and allowing rest during the spring growing and nesting/foraging season in deferred pastures and potential regrowth in early use pastures (See Section 3.1.3 for additional upland vegetation information). Season of use is very important in affecting wildlife seasonal habitat, with greatest negative effects to some upland wildlife species occurring during the spring nesting/foraging season (Connelly et al. 2007; Dobkin & Sauder, 2004).

Utilization levels exceeding 30-40% under deferred grazing systems or utilization exceeding 50% during the growing season can cause significant reductions in vegetative vigor and productivity (Anderson, 1991). For this reason, exceeding 40% upland utilization (up to the 50% utilization management action in the ORMP) may not be appropriate to maintain or improve upland wildlife habitat within the Nickel Creek FFR Allotment. Data collection would continue periodically over the length of the permit and be evaluated as part of the subsequent permit

renewal in order to determine whether livestock utilization in excess of 40% resulted in a failure to maintain or improve wildlife habitat within the allotment.

The 2013 Determination described recent improvements in hydric vegetation within the Nickel Creek FFR Allotment, and riparian areas did not appear to be affected by livestock grazing. Under Alternative A, pasture rotations and durations would be as described above (See Table 2.3) and would include spring, summer, and fall use in pastures containing riparian habitat (Pastures 6, 11, 14, and 19), providing for a mosaic of seasonal use across the landscape and allowing for potential regrowth in early use pastures. The continuation of current grazing management is expected to continue to improve riparian habitat within the allotment in the short and long term (2 to 10 years respectively, and depending on the current degradation and ecological resiliency of the site) and would continue through the term of the permit. Due to these factors, this grazing system appears to be making significant progress toward meeting Standard 8 for riparian wildlife habitat.

Under Alternative A, pasture rotation and durations would be as discussed above. Pastures containing riparian wildlife habitat could be grazed up to their maximum allowed number of days (See Table 2.3) at any time during their season of use (spring, summer, or fall). Specific riparian vegetation utilization and streambank alteration limits would apply under this alternative. However, the lack of rest, potential seasons of use, and allowable vegetation utilization in these pastures could result in negative impacts to some wildlife species and may not be appropriate to maintain and improve riparian wildlife habitat within the allotment.

Riparian utilization levels exceeding 40% in the spring can result in a lack of cover for ground nesting birds and can shift livestock use towards available woody browse in pastures grazed in the fall (Clary & Webster, 1989). Riparian utilization levels exceeding 35% in the late summer have also been shown to degrade fish habitat (McInnis & McIver, 2009). Woody browse utilization exceeding 30% in the spring and fall could negatively affect nesting habitat for some riparian-obligate migratory bird species by reducing available nest screening cover for the current or following year's breeding season (IDPF 2000). Competition between livestock and big game species in riparian habitat during the summer and early fall months can also result in negative impacts to animal fitness, productivity, and restrict forage quantity and quality (Loft 1991). Data collection would continue periodically over the length of the permit and be evaluated as part of the subsequent permit renewal in order to determine whether livestock impacts resulted in a failure to maintain or improve riparian wildlife habitat.

Focal Special Status Animal Species

Greater Sage-grouse

Under Alternative A, effects of livestock grazing on sage-grouse and their habitats in all spring-grazed pastures (See Table 2.3) that have the potential to occur include egg trampling, nest desertion, and the continuation of current habitat conditions (unsuitable to suitable) during the breeding season. Effects to sage-grouse brood rearing habitat in riparian pastures that have the potential to occur include deteriorated wet meadow hydrology and xeric species invasion, low forb abundance and diversity, and reduced amounts of herbaceous riparian vegetation. Effects in sage-grouse habitats would be expected for the term of the permit and could persist for decades.

Grazing management in sage-grouse habitat should include the long-term objective of promoting desirable plant communities and the annual objective of retaining a standing crop that adequately provides cover for sage-grouse (Cagney et al. 2010). Although the trampling of eggs and nests by livestock and subsequent displacement and nest abandonment have been documented (Coates et al. 2008), these direct effects are rare and isolated, and more than likely have a negligible influence on population levels. Specifically, current scientific literature identifies adequate canopy cover of sagebrush and tall grasses for nesting, abundant and diverse forbs and insects for brood rearing, and access to succulent and herbaceous riparian vegetation for summer foraging as critical components of healthy sage-grouse habitats (Crawford et al. 2004). Greater sagebrush and herbaceous cover provides vertical and horizontal concealment of nests from predators and has been demonstrated to result in higher nest success (Connelly et al. 1991) (Gregg et al. 1994) (DeLong et al. 1995) (Moynahan et al. 2007) (Coates & Delehanty 2010). In general, these studies observed that perennial herbaceous cover at successful nests averaged more than 7 inches in height. Based on these and other studies, current guidelines recommend managing breeding habitats to support perennial herbaceous vegetation averaging more than 7 inches in height at the end of the nesting period (late June) (Connelly et al. 2000), and residual grass heights more than 4 inches at the beginning of the nesting season (mid-May) (Hausleitner et al. 2005) (Holloran et al. 2005).

Under Alternative A, perennial herbaceous vegetation heights are expected to average 7 inches or more at the end of the nesting season in Pastures 4, 6, 9, 11, 14, 19 and 25, based on data collected within the allotment in 2011-2012 (Table 3.4; Figure 3.11). Average perennial herbaceous vegetation heights of 7 inches or greater would continue to provide suitable nesting cover in those pastures. In Pastures 21, 23, and 24, perennial herbaceous vegetation heights are expected to average 5 inches or more at the end of the nesting season, based on data collected within the allotment in 2011-2012 (Table 3.4). Average perennial herbaceous vegetation heights of fewer than 7 inches that would result from grazing under Alternative A would continue to provide only unsuitable to marginal nesting cover in those pastures.

Figure 3.11 - 2011-2012 Nickel Creek FFR utilization photos (Pastures 6, left, and 25, right) displaying perennial herbaceous vegetation heights > 7 inches at the end of the nesting season.

A review of the literature suggests that 40 to 45 percent utilization (i.e., moderate levels (Holechek, et al. 2006)) will maintain the health and vigor of bunchgrasses and other rangeland vegetation, and 30 to 35 percent utilization (i.e., conservative levels (Holechek, et al. 2006)) is needed to improve the health and vigor of bunchgrasses and other rangeland vegetation (Holechek, et al. 1999). Alternative A is expected to result in no more than 40% upland utilization, as has occurred under recent management (Table 3.4). However, there are no Terms and Conditions to keep it at this level. This level of utilization is appropriate for maintaining upland vegetation in the Nickel Creek FFR Allotment. Under these utilization levels, perennial bunchgrass and rangeland vegetation will remain mostly static over the term of the permit, and the condition of upland sage-grouse nesting habitats will remain similar to current conditions which, although providing suitable nesting cover based on perennial grass heights in Pastures 4-19 and 25, are only supplying unsuitable to marginal nesting cover in Pastures 21, 23, and 24.

Under Alternative A, sage-grouse late brood-rearing riparian habitat is expected to improve throughout the allotment because herbaceous cover in riparian areas would continue to increase (See Figure 3.11). Because vegetation within riparian areas would increase, riparian habitat would continue to make significant progress toward meeting the Standard.

Because the implementation of Alternative A would maintain unsuitable to marginal upland habitat conditions in some pastures for sage-grouse and other special status species, this alternative is not consistent with objectives of the BLM special status species policy in Manual 6840 (USDI BLM, 2008); in particular "to initiate proactive conservation measures that reduce or eliminate threats to Bureau sensitive species to minimize the likelihood of and need for listing of these species under the ESA."

Columbia Spotted Frog

Under Alternative A, riparian areas throughout the allotment are expected to improve because herbaceous and woody cover in riparian areas would continue to increase (See Figure 3.12), which would likely result in greater site stability and better water quality (Section 3.2.1). Because banks would be stable and vegetated along streams and vegetation within riparian areas would increase, erosion would decrease and riparian habitat would continue to make significant progress toward meeting the Standard. However, due to the potential season of use, physical impacts to amphibian egg masses (trampling) could still occur. The continued improvement of riparian habitat would likely result in population increases for this species.

However, under Alternative A, herbaceous and woody riparian vegetation within the allotment could receive utilization in excess of 40%. Riparian utilization levels exceeding 35% in the late summer have been shown to degrade riparian habitat (McInnis and McIver 2009). When riparian areas are utilized in this manner, effects to spotted frog habitat would be similar to those described for redband trout. Effects to spotted frogs and other amphibian species would be long-term and potentially last for more than 10 years because the degraded condition would continue through the term of the permit.

Figure 3.12 - 2011 Nickel Creek FFR PFC photos (Castle, left, and Smith Creek) displaying improving herbaceous and woody riparian vegetation.

Pygmy rabbit

Under Alternative A, conditions in upland habitats are not expected to improve or deteriorate due to a continuation of current livestock grazing management; therefore, in areas unaffected by juniper encroachment, big sagebrush cover and forage for pygmy rabbits would remain similar to current conditions. However, juniper encroachment in Pastures 4, 6, 9, and 11 would continue to degrade pygmy rabbit habitat by reducing forage and big sagebrush cover.

Columbia River Redband Trout

Under Alternative A, habitat for redband trout and other fish species would continue to improve (Figure 3.12). Stream habitats would improve because woody and herbaceous riparian vegetation would be more abundant, which could result in greater site stability and better water quality (Section 3.2.1). Increasing riparian vegetation would result in improved hiding cover which would reduce predation on redband trout and increase macroinvertebrate prey availability, both of which would likely increase redband trout survival. Shade and cover would improve and there would be an increase in stream channel characteristics including pools, undercut banks, and habitat complexity that would improve instream habitat for fish, which would decrease predation on redband trout and increase refuge areas during high water events resulting in increased survival. Localized sediment levels would likely be minimal, making gravel areas suitable for fish spawning, which would likely increase egg-to-fry survival, and creating better habitat for macroinvertebrates, which would increase the prey base for redband trout.

However, under Alternative A, herbaceous and woody riparian vegetation within the allotment could receive utilization in excess of 40%. Riparian utilization levels exceeding 35% in the late summer have been shown to degrade fish habitat (McInnis and McIver 2009). When riparian areas are utilized in this manner, effects to fish habitat include increased levels of surface fines, increased width-to-depth ratios, loss of cover, and reduced stream shading. Surface fines degrade spawning substrates and reduce reproductive success. Fines can suffocate eggs or trap newly hatched fry in the substrate. Direct effects from cattle trampling redds while eggs or fry are present may occur in the form of mortality. Increased width-to-depth ratios lead to simplified channels, which reduces hiding cover and leads to warmer water. Loss of overhead cover increases exposure to sunlight, which also reduces hiding cover and increases water

temperatures. Loss of hiding cover increases the likelihood that individual redband trout will be preyed upon, and increased water temperatures are likely to result in decreased survival of individual redband trout.

Under Alternative A, habitat conditions for redband trout and other fish species could deteriorate in streams within the allotment boundaries and for several miles downstream of the allotment. Bank trampling, reduced macroinvertebrate diversity and numbers, loss of desirable riparian vegetation, increased sedimentation, and reduced overhead cover would negatively affect redband trout and other fish species. As a result, the prey base for redband would decrease, sediment would likely suffocate or entomb incubating eggs and emerging fry, and reduced overhead cover would likely increase predation on redband trout. Without deep-rooted riparian vegetation, streams would be more susceptible to degradation from livestock and high water events. There would be a loss of habitat complexity important for redband trout such as fewer pools, undercut banks, and woody debris, which would likely result in increased vulnerability to predation. Width-to-depth ratios also would increase, which means streams would become wider and shallower. Wide, shallow streams provide less suitable habitat for redband trout, and would likely result in decreased survival. Juniper would increase in riparian areas leading to lowered water table, reduced groundwater recharge, and changes to nutrient cycling (Huxman et al. 2005) (Deboodt et al. 2009). Effects to redband trout and other fish species would be long-term and potentially last for more than 10 years because the degraded condition would continue through the term of the permit.

Migratory Birds, Raptors and other Birds (including Special Status Species)
Grazing management under Alternative A is not expected to either improve or deteriorate bird habitat conditions in the uplands. However, bird habitat conditions in riparian areas are expected to continue to improve. Increased cover in riparian areas would provide improvements in nesting and foraging substrates and cover. Habitat structure and complexity would also improve. An increase in structural complexity of woody species and the herbaceous understory in riparian areas would provide greater nesting and foraging opportunities because of an increase in cover and prey. Forage would likely be more abundant and reproductive success probably would increase. In turn, nesting success and populations would increase over the term of the permit as degraded riparian areas along stream reaches continue to recover.

However, under Alternative A, spring riparian utilization levels exceeding 40% can result in a lack of cover for ground nesting birds and can shift livestock use towards available woody browse in pastures grazed in the fall (Clary and Webster 1989). Woody browse utilization exceeding 30% in the spring and fall could negatively affect nesting habitat for some riparian-obligate migratory bird species by reducing available nest screening cover for the current or following year's breeding season (IDPF 2000).

Big Game and other Mammals (including Special Status Species)
The proposed timing and level of grazing under Alternative A is expected to improve forage and cover in riparian areas, while neither improving nor deteriorating conditions in the uplands. However, utilization of herbaceous and woody vegetation exceeding 40% could result in competition between livestock and big game species. Competition between livestock and big game species in riparian habitat during the summer and early fall months can result in negative

impacts to animal fitness, productivity, and restrict forage quantity and quality (Loft 1991). Riparian areas are extremely important for deer and elk foraging in the fall, and as fawning and calving habitat in the spring.

In general, livestock grazing is a competitive action with other herbivores that reduces available forage and reduces cover and habitat structure needed by smaller herbivores (Medin and Clary 1989) (Schulz and Leininger 1990) (Hayward et al. 1997). Effects of livestock grazing on big game and mammals under Alternative A could include reduced amounts of forage (e.g., grasses, forbs), browse (e.g., willows, sagebrush, bitterbrush, mountain mahogany), and protective cover. These effects could lead to lower winter survival due to a reduction of high-quality forage that deer and elk require in order to build up winter fat reserves. A reduction in cover could expose fawns and elk calves to greater predation and increase mortality rates.

Under Alternative A, habitat conditions for bighorn sheep would most likely remain similar to current conditions because upland habitat are not expected to improve or deteriorate over the term of the permit. Additionally, because bighorn sheep typically select habitats in rugged terrain and on steep slopes within the canyons adjacent to pastures 19 and 25, there is very little spatial overlap and resource competition with cattle. Grazing management under Alternative A is expected to have negligible effects on the local bighorn sheep population and their canyon habitats. Thus, negligible effects to the Owyhee River Bighorn Sheep Habitat ACEC are expected under Alternative A because bighorn sheet habitat, range condition, and scenic and natural values are expected to be maintained under continuation of current grazing practices.

3.3.2.2 Alternative B

Alternative B differs from Alternative A by a change in upland and woody browse utilization terms and conditions and that a specific season of use is not assumed or required. Therefore, use in any pasture could occur at any time throughout the year, with no limits on duration, frequency, or animal numbers, as long as an average of 40% upland herbaceous utilization, 25% riparian woody browse, and a 4 inch stubble height for riparian herbaceous vegetation per pasture or field was not exceeded and total AUMs for the allotment were not exceeded.

Implementation of Alternative B would not meet or make significant progress toward meeting Standard 8 for upland wildlife habitat because, as discussed in Alternative A, implementing the 40% upland utilization limit is expected to maintain the current condition of upland wildlife habitat. Current upland habitat conditions are not providing adequate resources (nesting cover, foraging cover, forage production) for some special status species in some pastures. There would also be no rest or deferment requirements in Alternative B. Thus, use could occur primarily during the critical spring foraging/nesting season when the greatest negative effects to some upland wildlife species can occur (Connelly et al. 2007, Dobkin et al. 2004).

Implementation of Alternative B is expected to make progress towards meeting Standard 8 for riparian wildlife habitat, but more slowly when compared to Alternative A. As discussed above, no specific season of use is assumed or required under this alternative, creating potential for riparian pastures to be grazed multiple times throughout the year at the discretion of the permittee. However, specific riparian vegetation utilization and stubble height limits would

apply under this alternative, ameliorating most of the negative impacts to special status wildlife species caused by livestock grazing. These terms and conditions would require annual monitoring by the permittee. If the term or condition is exceeded, that field or pasture would be rested the next year, thereby mitigating any excessive utilization that may have previously occurred. However, the potential season of use and allowable riparian stubble height in these pastures could still result in negative impacts to some special status wildlife species.

Spring grazing that results in riparian stubble heights of less than 6 inches can result in a lack of cover for ground nesting birds, increase incidents of songbird nest parasitism, and can shift livestock use towards available woody browse in pastures grazed in the fall (Clary and Webster 1989, IDPF 1998). Competition between livestock and big game species in riparian habitat during the summer and early fall months can also result in negative impacts to animal fitness, productivity, and restrict forage quantity and quality (Loft 1991). Data collection would continue periodically over the length of the permit and be evaluated as part of the subsequent permit renewal in order to determine whether livestock impacts resulted in a failure to maintain or improve riparian wildlife habitat.

Focal Special Status Animal Species

Greater Sage-grouse

Under Alternative B, effects to sage-grouse habitat in upland areas would be similar to those described in Alternative A. Alternative B is limited to no more than 40% upland herbaceous utilization and no specific season of use is required. Under these moderate utilization levels, perennial bunchgrass and rangeland vegetation will remain mostly static over the term of the permit, and the condition of upland sage-grouse nesting habitats will remain similar to current conditions which, although are likely providing suitable habitat in Pastures 4-19 and 25, are only supplying unsuitable to marginal habitat in Pastures 21, 23, and 24.

Under Alternative B, sage-grouse late brood-rearing riparian habitat is expected to improve throughout the allotment because herbaceous cover in riparian areas would continue to increase. Because vegetation within riparian areas would increase, riparian habitat would continue to make significant progress toward meeting the Standard.

Columbia Spotted Frog

Under Alternative B, spotted frog habitat would improve more slowly in comparison to Alternative A, primarily because of a lack of a specified rotation or deferment of livestock use. Direct effects to spotted frogs due to spring use could include trampling of amphibian egg masses, disturbed aquatic habitat, and reductions of prey items during the breeding season. However, implementing the 4 inches riparian herbaceous vegetation stubble height and 25% riparian woody browse utilization limit terms and conditions would ameliorate potential negative effects of spring and hot season use to riparian habitat, and is expected to gradually improve riparian habitat conditions. Herbaceous and woody cover in riparian areas would be more abundant, which could result in greater site stability and better water quality. Because bank stability and vegetation would increase, erosion potential would decrease and spotted frog habitat would improve. Overall, slight but significant progress in riparian vegetation and stream channels is expected for the long term, however due to the potential season of use, physical impacts to amphibian egg masses (i.e. trampling) could still occur.

Pygmy Rabbit
Under Alternative B, impacts to pygmy rabbits and other small to medium herbivores such as mice, voles, and jackrabbits would be the same as those discussed under Alternative A. Conditions in upland habitats are not expected to improve or deteriorate; therefore, in areas unaffected by juniper encroachment, big sagebrush and other herbaceous cover and forage would remain similar to current conditions. Conditions in riparian habitats would improve more slowly in comparison to Alternative A, primarily because of a lack of a specified rotation or deferment of livestock use.

Columbia River Redband Trout
Under Alternative B, habitat for redband trout and other fish species would improve more slowly in comparison to Alternative A, primarily because of a lack of a specified rotation or deferment of livestock use. Potential effects due to early and extended seasons of use could include bank trampling, reduced macroinvertebrate diversity and numbers, loss of desirable riparian vegetation, increased sedimentation, reduced overhead cover leading to increased predation and water temperatures, and egg trampling. However, implementing the 4 inch riparian herbaceous vegetation stubble height and 25% riparian woody browse utilization limit terms and conditions would ameliorate potential negative effects of spring and hot season use to riparian habitat. Direct effects to riparian areas from livestock would be negligible, and riparian vegetation would likely continue to improve. Increased vegetation and streambank stability would result in improved water quality and hiding cover, which would reduce predation on redband trout and increase macroinvertebrate prey availability. Shade and cover would improve and there would be an increase in stream channel characteristics including pools, undercut banks, and habitat complexity that would improve instream habitat for fish which would decrease predation on redband trout and increase refuge areas during high water events resulting in increased survival. Overall, slight but significant progress in riparian vegetation and stream channels is expected to occur over the long term (10 years). However, due to the potential season of use, physical impacts to fish egg masses and fry (i.e. trampling) could still occur.

Migratory Birds, Raptors and other Birds (including Special Status Species)
Under Alternative B, impacts to migratory birds in upland wildlife habitat would be the same as those discussed under Alternative A. Grazing management under Alternative B is not expected to either improve or deteriorate upland bird habitat conditions.

Under Alternative B, bird habitat conditions in riparian areas are expected to improve more slowly in comparison to Alternative A. This would be due primarily to a lack of a specified rotation or deferment of livestock use. Potential effects to birds from spring use in riparian areas could include disturbance to nesting and foraging activities, increased nest parasitism, and the physical trampling of nests during the breeding season. Potential effects of late-summer and fall use could include deteriorated wet meadow hydrology, an increase in xeric plant species, and reductions in available nest screening cover for the following year's breeding season. However, implementing the 4 inch riparian herbaceous vegetation stubble height, and 25% riparian woody browse utilization limit terms and conditions would ameliorate potential negative effects of spring, summer, or long duration use to riparian areas and is expected to gradually improve riparian migratory bird habitat.

Increases in herbaceous vegetation in riparian areas would provide improvements in nesting, foraging substrates, and cover. Habitat structure and complexity would improve. An increase in structural complexity of woody species and the herbaceous understory in riparian areas would provide greater nesting and foraging opportunities because of an increase in cover and prey. Forage would likely be more abundant and reproductive success would probably increase. In turn, nesting success and populations would increase over the term of the permit as riparian areas along reaches of streams would slowly recover and provide more structurally complex riparian habitat. Overall, this alternative would be beneficial to migratory bird habitat as improvements accrued in the long term (greater than 10 years).

However, the potential season of use and allowable riparian stubble height in these pastures could still result in negative impacts to some special status migratory bird species. Spring grazing that results in riparian stubble heights of less than 6 inches can result in a lack of adequate cover for some ground nesting birds, increase incidents of songbird nest parasitism, and cause disturbance to nesting activities and physical trampling of nests (IDPF 1998). Data collection would continue periodically over the length of the permit and be evaluated as part of the subsequent permit renewal in order to determine whether livestock impacts resulted in a failure to maintain or improve riparian wildlife habitat.

Big Game and other Mammals (including Special Status Species)
Under Alternative B, impacts to big game in upland habitats, including bighorn sheep, would be the same as those discussed under Alternative A. Upland habitat conditions are expected to neither improve or deteriorate with the implementation of a 40% upland utilization term and condition. Effects to the Owyhee River Bighorn Sheep Habitat ACEC would be similar to Alternative A.

Under Alternative B, big game habitat in riparian areas are expected to improve more slowly in comparison to Alternative A, primarily due to a lack of a specified rotation or deferment of livestock use. Effects of livestock grazing on big game and other mammals could include reduced amounts of forage (e.g., herbaceous riparian vegetation), browse (e.g., willows), and protective cover. These effects could lead to lower winter survival due to a reduction of high-quality forage that deer and elk require when building winter fat reserves. A reduction in cover could expose fawns and elk calves to greater predation and increase mortality rates. However, implementing the 4 inches riparian herbaceous vegetation stubble height and 25% riparian woody browse utilization limit terms and conditions would ameliorate potential negative effects of long duration use to riparian areas and is expected to gradually improve riparian big game habitat.

Light use of riparian areas would increase cover for fawns and elk calves during spring and summer months. Herbivores would benefit from the increase in cover and forage throughout the allotment from leaving an adequate amount of current year's growth. However, competition between livestock and big game could still occur in riparian areas as late summer/fall use could continue. Competition may cause displacement of deer and elk during a time when it is important to build up winter fat reserves.

3.3.2.3 Alternative C

Implementation of Alternative C, extended rest, would result in no direct livestock grazing effects on upland or riparian vegetation because no permitted livestock grazing would occur. Indirect effects from extended rest on upland vegetation and noxious and invasive weeds would lead to slow, long-term (greater than 10 years) improvement in plant community health, limited only by past soil and large bunchgrass loss and the presence of invasive weeds. Although the allotment is not expected to meet or make significant progress toward meeting Standard 8 for upland wildlife habitat in the next ten years because of limitations from causal factors (soil and large bunchgrass loss from past grazing, and the presence of invasive annual weeds), long-term (greater than 10 years) improvement in upland habitat conditions would be expected if no grazing continued.

Implementation of Alternative C would continue to make significant progress towards meeting Standard 8 for riparian wildlife habitat. Indirect effects from extended rest on riparian vegetation and stream function would lead to short and long-term (2 to greater than 10 years respectively) improvements in riparian plant community health and structure as well as stream function. Improvements to riparian wildlife habitat are expected to occur faster in this Alternative when compared to Alternatives A, B, or D.

Alternative C would improve conditions for all species of wildlife throughout the Nickel Creek FFR Allotment compared to Alternatives A, B and D. Vegetative structure and diversity, perennial herbaceous vegetation heights, residual cover, and available forage would increase in all habitat types. Riparian habitats would expand and improve because disturbance from livestock and associated management activities would not occur.

Overall, the allotment would become more diverse and productive as wildlife habitats improved and population numbers for most species increased. In general, the majority of negative effects associated with grazing identified in this EA would not occur across the allotment. However, private landowners within the Nickel Creek FFR Allotment may choose to build additional fencing throughout their holdings in order to continue grazing private lands at their discretion. An increase in fencing on private lands could potentially lead to an increase in wildlife fence collisions throughout the allotment. Also, without livestock grazing, increased grass and forb cover is expected, resulting in an increase in fine fuels. Increased levels and continuity of fine fuels may potentially increase wildfire size and intensity (Davies et al 2009), which could result in a reduction of upland wildlife habitat.

Focal Special Status Animal Species

Greater Sage-grouse

Under Alternative C, habitat for sage-grouse would improve more quickly in comparison to any other alternative, primarily because the negative effects of livestock grazing would no longer occur to the species or their habitat. With the removal of livestock, nesting structure and cover are expected to increase faster compared to all other alternatives in uplands, along with an increase and improvement of late brood-rearing habitat in meadows and riparian areas. Under Alternative C, improved habitat conditions could result in higher nesting success, juvenile survival, and productivity, which could increase local population numbers.

As discussed above, implementation of Alternative C could result in increased fencing on private lands within the Nickel Creek FFR Allotment. An increase in fencing could potentially lead to an increase in sage-grouse fence collisions throughout the allotment, particularly in areas in close proximity to active leks. A recent fence collision risk model, created from a randomized sampling of fences near sage-grouse leks in Idaho (Stevens 2011; Stevens et al. 2012), identifies the risk of sage-grouse fence collisions in the Nickel Creek FFR Allotment as negligible throughout all pastures except in portions of Pastures 11, 14, 19, and 25. The risk of fence collision on private lands within these pastures is rated low to moderate due to local topography and proximity to leks. The mortality resulting from potentially increased private fencing on the Nickel Creek FFR Allotment is expected to have negligible effects on the local sage-grouse population and their habitats due to the low risk of fence collision found on the majority of private lands within the allotment and the potential for improved habitat conditions discussed above.

Columbia Spotted Frog

Improvements to spotted frog habitat, as a result of removing livestock grazing, include increased levels of high emergent vegetation cover and lack of livestock trampling effects. An increase in suitable breeding areas could lead to greater reproductive output, and an increase in cover in the form of aquatic vegetation has been shown to lead to greater survival of offspring (Bull and Hayes 2000) and associated increases in population numbers would be expected.

Pygmy Rabbit

Removal of livestock grazing would improve habitat conditions for pygmy rabbits in a variety of ways. An increase in quantity and improvement of species composition of grasses (particularly native perennial bunchgrasses) and forbs would provide more and higher-quality spring and summer forage (Siegel Thines et al. 2004). In addition, a reduction of soil compaction and burrow collapse and an increase in rabbit use (as determined by burrows per unit area) would be expected with removal of livestock (Siegel Thines et al. 2004).

Columbia River Redband Trout

The removal of livestock grazing would promote the return and increase of herbaceous and woody plant vegetation along streambanks, creating greater stabilization, which would reduce sediment inputs and lead to improved channel conditions. Habitat features such as pools, undercut banks, and overhead cover, which are critical to redband production (Muhlfeld and Bennett 2001), are expected to increase. Increased shade and reduced sediments would also improve aquatic habitat by lowering stream temperatures which has been shown to increase density and biomass of redband trout (Lamberti et al. 1994; Tait et al. 1994; Zoellick 2004). As habitat improves, the redband trout populations within the allotment are expected to increase over the term of the permit.

Migratory Birds, Raptors, and other Birds (including Special Status Species)

Existing riparian areas would improve and expand and streams would eventually experience an increase in riparian areas, resulting in increased levels of riparian habitat across the allotment. Bird diversity and numbers increase when livestock are removed from an area (Taylor 1986; Bock et al. 1993; Dobkin et al 1998; Krueper et al. 2003; Earnst et al. 2005). Nesting structure and cover would increase and lead to greater reproductive success and improved population

numbers. Improved habitat conditions under Alternative C also would benefit all raptor species; nesting conditions would improve and prey numbers would increase, leading to greater levels of successful reproduction and survival of offspring.

Big Game and other Mammals (including Special Status Species)
As a result of removing livestock grazing, there would be more available forage for all herbivorous species and increased levels of protective cover. Desirable perennial bunchgrass and forb species could increase over time and competition between cattle and other herbivores would not occur. Population numbers of big game and other herbivores would be expected to increase. Habitat for bighorn sheep, including the Owyhee River Bighorn Sheep Habitat ACEC, would be maintained or improved. Willow and aspen would be expected to increase across the allotment at suitable sites. This most likely would lead to increased numbers of beaver in the area and lead to habitat creation or improvements for many species, including spotted frog and redband trout.

3.3.2.4 Alternative D

Alternative D requires a specified season of use and limits the duration in any field or pasture to no more than 30 days a year. As a result, there would be less regrazing of individual bunchgrasses within a season compared to Alternatives A and B. Alternative D has more deferred use than Alternatives A and B, because five riparian fields would be used only in the fall, rather than the spring/summer use allowed in those alternatives. Additional deferred use means that more pastures or fields would not have growing season effects to habitat, and that the previously discussed livestock impacts associated with spring use would not occur to wildlife species in deferred fields. The implementation of a 6 inch riparian vegetation stubble height and 25% woody browse utilization limit would also provide adequate available nest screening cover for the following year's migratory bird breeding season . In addition, utilization limits of 30% in the spring (during the critical growing period when vegetation and some wildlife species are most susceptible to grazing effects) and 40% in other seasons means that the intensity of use is limited in all pastures, and grazing impacts to upland and riparian wildlife habitat would be minimized.

As a result, grazing effects on upland and riparian wildlife habitat would be expected to be lower in Alternative D than in Alternatives A and B, and rather than maintain conditions, a slow (limited by the ecological resiliency of the site) improvement in upland habitat would be expected. The addition of fall deferment and riparian vegetation height and utilization limits would also be expected to cause riparian habitat conditions to improve faster than under Alternatives A and B.

Utilization of palatable upland and riparian shrub browse species (i.e. bitterbrush and willows) may be slightly increased because of the shift from spring/summer to fall use in some pastures, but because there is a browse utilization limit on riparian shrub species (as well as key riparian herbaceous species) in those pastures, overall use in those pastures is expected to be light, and so use of upland browse species is also expected to be light. Thus, shrub browse species are expected to be maintained or slowly improve under this alternative. However, competition between livestock and big game could still occur in riparian pastures where fall use occurs.

Competition may cause displacement of deer and elk during a time when it is important to build up winter fat reserves.

Although the allotment is not expected to meet or make significant progress toward meeting Standard 8 for upland wildlife habitat in the next ten years because of limitations from causal factors (soil and large bunchgrass loss from past grazing, and the presence of invasive annual weeds), long-term (greater than 10 years) improvement in upland habitat conditions would be expected if Alternative D's management continued.

Focal Special Status Animal Species

Greater Sage-grouse

Effects to sage-grouse and their habitats in all spring grazed pastures from the implementation of a grazing rotation and 30% spring upland utilization would be similar to those discussed in Alternative A. However, due to a 30% spring upland utilization limit, grazing effects to sage-grouse upland habitat would be minimized in comparison to Alternatives A and B. In addition, spring grazing effects to sage-grouse would not occur in deferred pastures. The implementation of a 6 inch herbaceous riparian stubble height requirement would be similar to those discussed in Alternative B, except that the increased height of riparian vegetation and fall deferment would provide higher quality brood-rearing habitat when compared with Alternatives A or B.

Because implementation of Alternative D would minimize grazing impacts to upland and riparian sage-grouse habitat, we expect an average perennial herbaceous vegetation heights of 7 inches or more in sagebrush during the breeding season, which would promote high plant community vigor, provide an adequate perennial herbaceous vegetation height during the subsequent nesting/early brood-rearing season, and continue improvement of sage-grouse nesting habitats. As a result, this alternative is consistent with objectives of the BLM special status species policy in Manual 6840 (USDI-BLM 2008), in particular, "to initiate proactive conservation measures that reduce or eliminate threats to Bureau sensitive species to minimize the likelihood of and need for listing of these species under the ESA".

Columbia Spotted Frog

Under Alternative D, habitat for spotted frogs would improve more quickly compared to Alternatives A and B, because of the implementation of a specified grazing rotation, deferment of livestock, a 6 inch herbaceous riparian vegetation stubble height, and a 25% riparian woody browse utilization limit. In addition, spring grazing effects to spotted frogs would not occur in deferred pastures. Effects from the implementation of a 6 inch herbaceous riparian vegetation stubble height requirement and a 25% riparian woody browse limit would be similar to those discussed in Alternative B, except that the increased height of riparian vegetation and fall deferment would provide higher quality riparian habitat when compared with Alternatives A or B.

Pygmy Rabbit

Effects from the implementation of a grazing rotation, deferment of livestock, and 30% spring upland utilization would be similar to those discussed in Alternative A. However, due to a 30% spring upland utilization limit, grazing effects to upland habitats would be minimized in comparison to Alternatives A and B. In addition, spring grazing effects to pygmy rabbits and

other small mammals would not occur in deferred pastures. Effects from the implementation of a 6 inch herbaceous riparian vegetation stubble height requirement would be similar to those discussed in Alternative B, except that the increased height of riparian vegetation and fall deferment would provide higher quality riparian habitat when compared with Alternatives A or B.

Columbia River Redband Trout
Under Alternative D, habitat for redband trout would improve more quickly compared to Alternatives A and B, because of the implementation of a specified grazing rotation, deferment of livestock, a 6 inch herbaceous riparian vegetation stubble height, and a 25% riparian woody browse utilization limit. In addition, spring grazing effects to redband trout and other fish would not occur in deferred pastures. Effects from the implementation of a 6 inch herbaceous riparian vegetation stubble height requirement and a 25% riparian woody browse limit would be similar to those discussed in Alternative B, except that the increased height of riparian vegetation and fall deferment would provide higher quality riparian habitat when compared with Alternatives A or B.

Migratory Birds, Raptors, and other Birds (including Special Status Species)
Effects from the implementation of a grazing rotation, deferment of livestock, and 30% spring upland utilization would be the same as those discussed in Alternative A. However, due to a 30% spring upland utilization limit, grazing effects to upland habitats would be minimized in comparison to Alternatives A and B. In addition, spring grazing effects to migratory birds would not occur in deferred pastures. Effects from the implementation of a 6 inch herbaceous riparian vegetation stubble height requirement would be similar to those discussed in Alternative B, except that higher herbaceous vegetation stubble heights would provide increased cover for ground nesters and reduce livestock impacts on willows and other riparian woody browse species when compared with Alternatives A or B.

Big Game and other Mammals (including Special Status Species)
Effects from the implementation of a grazing rotation, deferment of livestock, and 30% spring upland utilization would be the same as those discussed in Alternative A. However, due to a 30% spring upland utilization limit, grazing effects to upland habitats would be minimized in comparison to Alternatives A and B. In addition, spring grazing effects from livestock use would not occur in deferred pastures. Effects from the implementation of a 6 inch herbaceous riparian vegetation stubble height requirement would be similar to those discussed in Alternative A, except that the light use of herbaceous and woody riparian vegetation would provide higher quality riparian habitat when compared with Alternatives A or B. However, competition between livestock and big game could still occur in riparian pastures where fall use occurs. Competition may cause displacement of deer and elk during a time when it is important to build up winter fat reserves. Little or no effect to the Owyhee River Bighorn Sheep Habitat ACEC is expected, similar to Alternative A.

3.4 Special Status Plants

3.4.1 Affected Environment

No plants listed under the Endangered Species Act (ESA 1973) are known or suspected to occur within or near the Nickel Creek FFR Allotment (USDI-USFWS 2009). Slickspot peppergrass, *Lepidium papilliferum*, a species proposed for listing as Endangered under the ESA, occurs in eastern Owyhee County, but is not currently known to occur in western Owyhee County or the Owyhee Field Office Area (USDI-USFWS 2010c). No soil types containing slickspot microsites are likely to occur in the Nickel Creek FFR Allotment. Therefore, this plant will not be discussed further.

Three BLM special status plants (SSPs) have been recorded within the Nickel Creek FFR. Mud Flat milkvetch, *Astragalus yoder-williamsii*, has been recorded from private lands in Pastures 6 and 11, and thinleaf goldenhead, *Pyrrocoma linearis*, was recorded from private lands in Pastures 11 and 14; both species were last recorded in these locations in 1992 and no current information is available. Short-lobed penstemon, *Penstemon seorsus*, was found on public lands within Pasture 4 in 2011. Very few botanical inventories have occurred in the Nickel Creek FFR Allotment. Mud Flat milkvetch and thinleaf goldenhead are BLM Type 3 plants (Rangewide or Statewide Imperiled – Moderate Endangerment), while short-lobed penstemon is BLM Type 4 (Species of Concern) (USDI-BLM 2012b).

Mud Flat milkvetch is a diminutive perennial whose distribution is restricted to uplands in the upper forks of the Owyhee River and one disjunct location in Nevada. In Idaho, Mud Flat milkvetch occurs on flat to very gentle slopes predominately in swale positions on fine loamy soils in mountain big sagebrush and low sagebrush communities. Because it is very small, it is not readily consumed by livestock. It appears tolerant of some disturbance, as some portions of some populations occur in areas of heavy grazing, along road tracks, in recently burned areas, and in association with ant hills, if allowed sufficient recovery (Mancuso and Moseley 1993). Although not known from public lands within the Nickel Creek FFR Allotment, there may be a small amount of potential habitat within this area.

Thinleaf goldenhead occurs in wet or dry, often alkaline meadows, streambanks, or around springs. Its worldwide range is Owyhee County, Idaho, and Harney County, Oregon (USDA-NRCS 2012). It is an herbaceous perennial about 6-12" tall. It is most sensitive to grazing during critical spring growth and flowering, but its subterranean, rhizomatous growing point is somewhat resistant to moderate trampling at other times of year (Corbin, personal observation). Thinleaf goldenhead is not known from public lands within the FFR, although limited potential habitat may exist.

Short-lobed penstemon occurs on dry, rocky low sagebrush slopes and is found in eastern Oregon and in Owyhee, Washington, and Custer Counties, Idaho (USDA-NRCS 2013). It is a perennial about 12" tall. Livestock impacts to this plant across its range are unknown, but as a rather brittle perennial, it would subject to grazing and trampling impacts throughout the year. When found in 2011, no effects from grazing or trampling were observed at the occurrence in Pasture 4 (Corbin, personal observation).

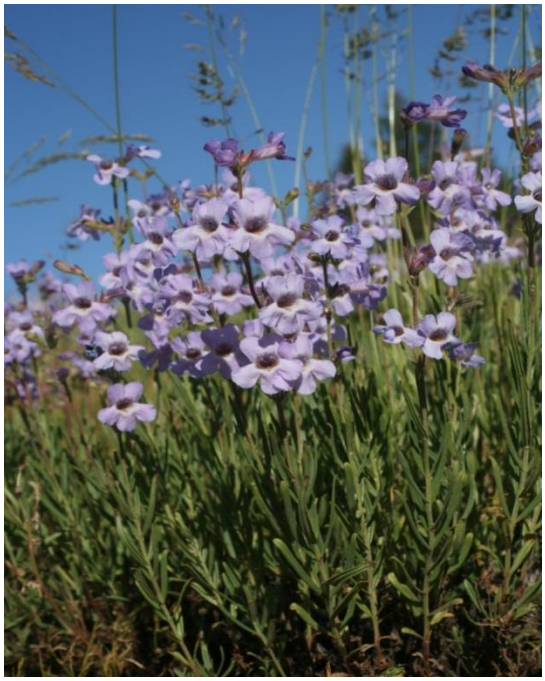

Figure 3.5.1. Short-lobed penstemon. Photo by Clint Shock.

The 2013 Determination of Standards indicates that Standard 8 is being met for Special Status Plants, because the one known occurrence of short-lobed penstemon appeared healthy and not affected by current grazing. If Mud Flat milkvetch is present on public lands in this allotment, it is likely that its habitat (openings in mountain big sagebrush or low sagebrush communities) is suitable to maintain viable populations of this plant. Likewise, if thinleaf goldenhead occurs on BLM lands in this allotment, it is expected that its habitat is on an upward trend, similar to other riparian areas in the allotment.

3.4.2 Environmental Consequences

3.4.2.1 Alternative A

Alternative A, continuation of current grazing practices, is expected to continue meet Standard 8 for special status plants. Pasture rotations would be specified and utilization of key forage species is expected to continue to average less than 40%, although utilization could be up to 50%. With implementation of the rotation system in Pasture 4, cattle would be in the field containing short-lobed penstemon for a limited time period, and overall utilization is expected to generally be below 40%. Therefore, grazing (herbivory) and trampling of short-lobed penstemon, which is not a preferred forage plant, is expected also to be light. Herbivory effects would be most harmful during the active growing season, which for this species is between about April through July, and could include removal of flowering stalks and photosynthetic material. This pasture may be used during this time in this alternative, but based on 2011 observations of this occurrence under this management in which no grazing or trampling effects were evident, little impact is expected at this particular site. If the field is used later in the season (after July, also possible with the proposed rotation), plants are unlikely to be grazed because they're dry and brittle, but individuals could be trampled, which would break stems and

reduce vigor and the reproductive and photosynthetic potential of those plants in subsequent years. Trampling could also displace seedlings and thus reduce recruitment. Because of the relatively light observed use of this pasture, trampling effects, which like utilization are related to the number and duration of animals in a field, are also expected to be relatively light, and thus unlikely to affect many short-lobed penstemon plants. As a result, implementation of Alternative A is not expected to have detrimental effects on short-lobed penstemon.

Alternative A would not have significant negative effects on Mud Flat milkvetch or thinleaf goldenhead, if either occurs on public lands in the allotment. Habitat for Mud Flat milkvetch is openings within sagebrush communities, and these would be maintained under Alternative A's grazing management. Virtually no herbivory is anticipated on this small plant, and because plants are resilient to trampling, the amount of trampling likely to occur with the expected level of use is not anticipated to have negative effects on any occurrence. Thinleaf goldenhead grows in seasonally wet or riparian areas, and because riparian areas are expected to continue to improve under this alternative, habitat for thinleaf goldenhead (if present) is also likely to improve.

Indirect effects on special status plant habitat from grazing could include potential increases in weeds and impacts to native pollinators (such as trampling ground-nesting bees). However, given the grazing rotational grazing system and relatively light use anticipated in Alternative A, plant communities are likely to maintain healthy conditions and weeds are not expected to increase, so indirect effects of weeds spreading into special status plant habitat are not anticipated. Because no heavy trampling is expected, effects to pollinators such as ground-nesting bees are unlikely.

3.4.2.2 Alternative B

Implementation of Alternative B is expected to meet Standard 8 for special status plants, based on implementation of the 40% upland utilization design feature. As discussed in Alternative A, if utilization of key forage species is less than 40%, then herbivory and trampling of short-lobed penstemon, which is not a preferred forage plant, are expected to also be light. Alternative B does not specify a season or duration of use, so under this alternative, pasture(s) containing special status plants could be used during the active growing season. Effects of use during the active growing season (generally April through July) could include removal of flowering stalks and photosynthetic material of short-lobed penstemon, which may reduce seed set (reproductive potential) and plant vigor. Trampling of short-lobed penstemon at any time of year could break stems and also reduce vigor. However, effects from trampling or growing season herbivory are not expected to impact many plants within the population under this level of grazing, and the occurrence is expected to remain healthy.

Grazing management under Alternative B would not have significant effects on Mud Flat milkvetch or thinleaf goldenhead, if either occurs on public lands in the allotment, for the same reasons as discussed in Alternative A. Mud Flat milkvetch habitat (openings within sagebrush) would be maintained, herbivory is not expected because the plants are small, and this species appears quite resilient to trampling at the level of grazing expected under Alternative B. Riparian areas are expected to continue to improve, so habitat for thinleaf goldenhead (if present) would also be expected to improve.

Indirect effects to special status plant habitat from weed increases are not expected under Alternative B. Trampling effects to native pollinators, such as ground-nesting bees, are not expected because heavy trampling is not likely to occur under this level of use.

3.4.2.3 Alternative C

The extended rest or no grazing for a ten year period alternative would result in no direct herbivory or trampling effects on Special Status Plants in the Nickel Creek FFR Allotment. No livestock herbivory of flowering stalks or photosynthetic material would occur, and no trampling would displace seedlings, break brittle stems, or trample ground-nesting pollinators. No indirect effects from grazing on invasive weeds would affect special status plant habitat. Thus, Alternative C would meet Standard 8 for Special Status Plants because no negative effects from livestock grazing on these plants or their habitats would occur.

3.4.2.4 Alternative D

Implementation of Alternative D is expected to meet Standard 8 for special status plants, based on implementation of a rotational grazing system, limiting the duration of use to no more than 30 days/year per field or pasture, limiting utilization of key upland forage species to less than 30% in the spring or 40% the rest of the year, and limiting riparian use. Grazing intensity and duration would be reduced compared to Alternative A in upland pastures, so effects to short-lobed penstemon and Mud Flat milkvetch (if present) would be similar to but at a reduced magnitude than those described in Alternative A. Riparian areas are expected to improve faster in Alternative D than in Alternative A because of the combination of the fall season of use, 6" riparian stubble height requirement, and 25% riparian browse utilization limit in riparian fields and pastures, so habitat for thinleaf goldenhead (if present) would also be expected to improve at a faster rate than in Alternative A.

Indirect effects to Special Status Plant habitat from grazing would be similar to or less than those described in Alternative A, with no grazing-related weed increase expected, and little chance of trampling ground-nesting pollinator bees at this level of use. Because direct and indirect effects from grazing management in Alternative D are not expected to substantially affect viability of any occurrence of Special Status Plants, Alternative D would meet Standard 8 for Special Status Plants.

3.5 Grazing Management

3.5.1 Affected Environment

The Nickel Creek FFR Allotment is divided into three geographic areas (northern, southern, and central) by the JMGA to keep each member's livestock separate, which helps with livestock husbandry and also helps them in the orderly use of Nickel Creek FFR and Nickel Creek Allotments, which they are also permitted to graze on. In the southern portion (Figure 1.4), livestock use within Pastures 23, 24, and 25 of the Nickel Creek FFR Allotment generally corresponds with livestock use within Pastures 26A, 26B, 27B, 17, 18, 20/22 and 27A of the Nickel Creek Allotment.

When livestock are gathered off the BLM lands in the southern area they are moved into the Nickel Creek FFR Allotment where they are either shipped home or moved closer to the Mud Flat Road from which they are shipped home. In the northern portion (Figure 1.2), Fields 1 and 2 of Pasture 4 of the Nickel Creek FFR Allotment are generally used as a starting and ending point for the livestock rotation for Pastures 1, 8A, 8B and 2 of the Nickel Creek Allotment. Pasture 9 of the Nickel Creek FFR Allotment is used as a starting and ending location for livestock rotation in Pastures 13, 7B, 16B, 16A, 7A, 5 and 10 of the Nickel Creek Allotment. This helps with shipping livestock to and from private land. In the central portion (Figure 1.3), the livestock are generally rotated within the pastures and fields as well as between the northern and southern portions of the FFR.

No springs, wells, or ponds are present on public lands in this allotment. There are approximately 60-70 miles of boundary and internal fences used to keep livestock in the individual fields and pastures. Annual authorized grazing use has been permitted at the permittee's discretion between March 1 and February 28 (yearlong) as long as degradation does not occur on public land. This flexibility to graze these pastures with various numbers of livestock throughout the grazing season helps the JMGA graze livestock in this area.

In the last few years, the members have made improvements to their private lands within the allotment by removing juniper and irrigating.

3.5.2 Environmental Consequences

3.5.2.1 Alternative A

This alternative would renew the grazing permit consistent with how the JMGA is currently grazing the allotment. JMGA would be required to follow the grazing system in Table 2.3 and the permit would authorize grazing use from April 1 to November 20. The new grazing permit would allow livestock numbers to vary, however the specified season, maximum duration, frequency for each pasture or field could not be adjusted. The permit would authorize 109 AUMs. Terms and conditions for riparian stubble height, woody browse, utilization and stream bank alteration would also be required. Under this alternative, the BLM would not adjust grazing because current management is appropriate for long-term grazing because use has been at 40% or the upper end of light use. The vigor and health of the plants would support continued livestock use at this level. Continuation of current management should have minimal short (less than 1 year) or long term (greater than 10 years) effect to the JMGA because this grazing system is currently how the JMGA are grazing the allotment.

Generally, there should be no change in the overall costs to the JMGA assuming there is no major change in other cost the association may need to meet. For this reason, the JMGA should continue to contribute to the counties as they have in the past. Because there is no reduction in AUMs or change in current management, there should be no short (less than 1 year) or long (greater than 5 years) term effects on the JMGA livestock operation.

3.5.2.2 Alternative B

Under this alternative, the permitted season of use allows for season-long grazing at JMGA discretion as long as AUMs are not exceeded. Because this permit would allow for 12 months of

grazing with varying livestock numbers, the OFO identified riparian and upland resource concerns. To minimize these concerns, the BLM has proposed limits on upland utilization, riparian stubble height, and woody browse to address the concern of permitting 12 months of grazing with varying livestock numbers. The addition of these terms and conditions would ensure that livestock use is not exceeding the capacity of the public land and if, for example, the utilization exceeded this limit, rest from livestock use the following year would minimize potential negative long-term effects. For this reason, the vigor and health of the upland and riparian forage would support continued livestock use at this management practice.

This alternative would also require annual monitoring by the JMGA to ensure compliance with these terms and conditions. Conformance with the annual monitoring requirement would result in increased cost for the JMGA in the short and long term if they hire a contractor. However, this cost would be minor compared to the overall cost to manage and run the cattle operations and may also provide monitoring information useful for the ranch. If the JMGA completed the monitoring themselves, then there would be minimal monetary costs but would require time. It is assumed that this monitoring could be completed in two days per year.

If the monitoring information revealed noncompliance with the monitoring terms and conditions, then that pasture or field would need to be rested the following year. Because past monitoring information has not documented exceeding upland utilization and riparian stubble observed during PFC monitoring, it is assumed that the JMGA would not need to rest a pasture. For these reasons, this alternative should not have short (less than 1 year) or long (greater than 5 years) term impacts on the JMGA livestock operation.

3.5.2.3 Alternative C

Under this alternative, livestock would not be allowed to graze public land within the Nickel Creek FFR Allotment. This would result in a loss of 109 AUMs/year for ten years. This would result in these lands not being grazed for up to a maximum of 12 months/year based on the permit or approximately 9 months/year based on how the JMGA is currently grazing the allotment. If the JMGA still want to graze their private land while the BLM land is rested, then they would have to keep livestock off the public land by fencing or riding. Upon expiration of the ten-year term permit, livestock grazing on the allotment would be reevaluated with retention of preference (priority for grazing authorization) to the JMGA.

3.5.2.4 Alternative D

Under this alternative the permittee would be responsible to follow the grazing rotation outlined in Table 2.8, livestock numbers could vary, the season of use would be from April 1 to November 20, the frequency of use for each pasture could not be adjusted, and authorized AUMs would be 109. These effects would be the same as in Alternative A.

This alternative would also reduce the duration of grazing on 22 of the 24 fields from 45 days to 30 days. This would result in a reduction of 209 days of total grazing days/year in all fields and pastures (904 total days/year in Alternative A vs 695 total days/year in Alternative D). The loss of 209 days would require the members to stay on private land off the allotment longer and/or go home to private land off the allotment sooner. The change in season of use may result in years

when these pastures or fields may not be used which could result in short-term reduction in use. This could result in increased feed cost to the permittee in the short and long-term.

This alternative would also require conformance with upland utilization limits that are more stringent than Alternative B. This should have minimal impact on the permittee because current utilization has been below 40% and most use has been below 30%. Conformance with the riparian stubble heights in the identified pastures or fields would require the JMGA to closely monitor these riparian areas because regrowth would be minimal after November 20. There should be minimal effect on the JMGA ability to conformance with the riparian woody browse requirement because cattle generally not graze woody plants until the grasses and forbs have been consumed. Maintaining the 6-inch stubble height means that cattle are not expected to switch to browse consumption.

3.6 Cultural Resources

3.6.1 Affected Environment

Cultural resources are physical remnants of human activities or traditional lifeway values that are identifiable through field inventory (surveys), document research and ethnography. They include objects made, modified, or used by humans, such as portable artifacts and non-portable features. Stratified sites may contain perishable materials like pollen and faunal remains that reflect human adaptations to specific environments and ecosystems. Because of the social and scientific value placed on these resources, their fragile irreplaceable nature, and importance to national and local heritage, they have been protected under a variety of laws and regulations dating back to the 1906 Antiquities Act that made it illegal to collect artifacts or excavate archaeological sites without a permit on public lands. Compliance with the National Historic Preservation act of 1966, in conjunction with NEPA and other authorities, requires that potential effects to significant cultural resources, those eligible for or determined to be eligible for listing on the National Register of Historic Places (NRHP), will be considered before Federal agencies undertake any action or authorization.

For this EA, the direct effects analysis area is restricted to cultural resources within and immediately surrounding the FFR, while both the Nickel Creek and Nickel Creek FFR allotments (including a quarter mile buffer) were analyzed as the affected area to better understand the context, history, and potential impacts on cultural and paleontological resources. The FFR boundaries are fragmented and geographically arbitrary, and a loss of significant sites would affect our understanding of the prehistory of the broader surrounding landscape. The additional information provided by expanding the analysis into the Nickel Creek Allotment also provides better information on observed and potential site type and density than could be gleaned from the few surveys done in the FFR pastures. The effects analysis did consider the FFR pastures as distinct from the rest of the affected area due to differences in grazing management and the lack of water developments or other congregation spots on BLM lands within the FFR that could lead directly or indirectly to impacts.

The general Nickel Creek area considered for this analysis has landscape, resource, and site density characteristics that set it apart from its surroundings. Tablelands and flats dominate the northern area where they are surrounded by forested hills, springs, and creeks. The Sheep Hills

and Owyhee River lie to the south and Deep Creek is to the east. Available information shows site density intermediate between a prime area to the east with abundant and diverse sites, and other surrounding areas where even large-scale intensive surveys have revealed relatively few sites. A broad diversity of site functions and moderately heavy site density are likely a reflection of the resource and landscape variability across relatively short distances in the Nickel Creek area.

A Class I literature and GIS search of SHPO and BLM records reflects 38 recent archaeological field surveys performed to modern standards with 1,313 acres inventoried within the Nickel Creek Allotment pastures (one of which was on State land) and just two recent surveys covering 93 acres within Nickel Creek FFR Allotment pastures (only 1.6 of which were on BLM land, while 91.4 were on private land). The inventories were completed as proactive surveys, in preparation for fuels treatments and woodcuts, a land exchange, and for range projects including spring developments and fence construction. Within a quarter mile buffer of the Nickel Creek and Nickel Creek FFR allotments, 6 isolated artifacts and 80 archaeological sites are reported, 82 of which have pre-contact components, and four of which contain historic components. Four of those sites are reported within the FFR boundaries on BLM land. The sites are associated with a number of prehistoric activities such as habitation, hunting and game processing, lithic raw material procurement, and temporary resource processing. Diagnostic artifacts demonstrate American Indian occupation of the area from a few hundred to at least three thousand years ago. Rock features, such as hunting blinds, constructed in the area reflect significant time investments and many sites were used repeatedly. Recorded historic sites include a few rock cairns that may have been property or survey markers, a possible stone drift fence, and scatters of cans and bottles that are remnants of trash dumping or short-term camping. National Register of Historic Places (NRHP) eligibility determinations have not been formally made on any of the 86 sites. However, several sites appear to be NRHP eligible based on their reported characteristics, mainly the potential to yield important information regarding history or prehistory. Both NRHP eligible and non-eligible sites, isolated finds, and the landscape itself are important to reconstructing past lifeways, providing insights into past human behavior, and establishing historic and cultural contexts for environments. Such resources may be significant to local cultures, traditions, and heritage, and help maintain group identity.

3.6.2 Environmental Consequences

3.6.2.1 Alternative A

Under Alternative A, range readiness criteria and other Terms and Conditions would have to be met. The April to mid-November grazing season and other current management requirements would have slight benefits to cultural resources since current grazing management has resulted in static or improving vegetation and soil conditions that would positively affect the stability of archaeological sites. Minor surface disturbances only affecting the upper ten centimeters of sites such as artifact displacement, occasional breakage of surface artifacts, wallowing, and trail formation would be rare due to the general lack of congregation areas that might otherwise concentrate such effects and lead to eventual erosion. Post-holing by hoofs in wet soils is unlikely to reach beyond previously disturbed levels due to the absence of water sources on BLM lands in most pastures. Any remaining rock features are likely very resilient or subject to eventual collapse though cattle rubbing, etc. could speed the process. If cattle impacts occur to

features they would retain their construction materials and general footprint, thus retaining their scientific, but not necessarily their aesthetic value.

No changes in site NRHP eligibility status or limitations on access to traditional or culturally significant resources would be expected under this alternative during the length of the permit; therefore, it has been determined that no historic properties would be affected by the proposed alternative.

3.6.2.2 Alternative B

Under Alternative B, the grazing permit would not limit the season of use. If biological soil crusts decline due to winter and wet spring grazing, sheet wash and other erosional factors may be more likely to affect sites. For this reason, impacts to cultural resources could be somewhat greater than under other alternatives, with a potential for earlier or repeated use of individual pastures and less ideal riparian and upland soil conditions. Range readiness criteria and Terms and Conditions would still have to be met. These stipulations are expected to prevent any significant grazing-related vegetation or soil disturbance that could lead to impacts to subsurface components at archaeological sites or other significant cultural resources. Although effects could be slightly greater than under Alternative A, no changes in site NRHP eligibility status or limitations on access to traditional or culturally significant resources would be expected under this alternative during the length of the permit; therefore, it has been determined that no historic properties would be affected by the proposed alternative.

3.6.2.3 Alternative C

Under this alternative, livestock grazing would be excluded from BLM lands. Removal of cattle from the BLM portions or completely from FFR pastures could offer site protection from potential direct grazing effects such as artifact trampling and trail formation. No livestock use for the term of this permit could benefit sites indirectly by increased cover from vegetation that would increase soil stability and decrease the potential for erosion and subsequent loss of site integrity. More dense vegetation can also help shield sites from potential illegal activities of artifact collectors and vandals. Site aesthetics would be improved during the period of no authorized grazing, but with few expected visitors the latter effects would be a minor advantage. No historic properties would be affected by the proposed alternative.

3.6.2.4 Alternative D

Under this alternative, cultural resources would have more stringent protection when compared with Alternatives A or B. The season of use and grazing rotation would be limited to a system that would be expected to result in improved range conditions including better soil and vegetation stability than was the case with previous grazing management. Like Alternatives A and B, sites could still undergo some direct effects from cattle trampling, etc., but unlike Alternative C, extensive fence construction would not be necessary and thus potential direct and indirect effects from fencing would be avoided. Effects would probably be very similar to Alternative A because of the similarity in grazing management.

No changes in site NRHP eligibility status or limitations on access to traditional or culturally significant resources would be expected under this alternative during the length of the permit;

therefore, it has been determined that no historic properties would be affected by the proposed alternative.

4.0 Cumulative Effects

Cumulative effects from activities proposed in the Nickel Creek FFR Allotment in combination with other activities are discussed below for each resource. "Cumulative Effect" is defined as the "impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions" (40 CFR §1508.7). The Council on Environmental Quality interprets this regulation as referring only to the cumulative impact of the direct and indirect effects of the proposed action and its alternatives when added to the aggregate effects of past, present, and reasonably foreseeable future actions.

Scope

The scope (area and timeframe) of the cumulative effects analysis is described for each resource. Past, present, and reasonably foreseeable future activities and events in the general area that affect all or most resources include livestock grazing, wildfires, juniper treatments (cutting and prescribed burns), and transportation planning. These and other activities that may affect only one or a few resources will be discussed in the individual resource sections based on that resource's cumulative effects analysis area and specific effects to that resource. Reasonably foreseeable additions include activities with completed NEPA scoping or decisions, funding, formal proposals, or which are highly probable, based on known opportunities or trends, and with implementation planned to begin within three years.

Reasonably Foreseeable Future Actions

- Reasonably foreseeable future activities in the general vicinity include:
- Livestock grazing permit renewals;
- Range improvement projects (fences, cattle-guards, water haul sites);
- Juniper treatment (on BLM and private lands), including about 300 acres JMGA plans to cut on private lands within or near the allotment;
- Transportation management plan for Owyhee County;
- Land exchange between BLM and State lands in Pasture 25 and elsewhere as part of OPLMA; and
- Energy transmission lines.

BLM is not aware of any proposed energy development in the general area, although some development may occur on private lands.

The effects of these future actions are discussed in individual resource sections, as appropriate.

Because direct and indirect effects to Special Status Plants are relatively small, no substantial cumulative effects to these plants are anticipated, and no further discussion is provided.

4.1 Upland Vegetation and Noxious and Invasive Weeds – Cumulative Effects

4.1.1 Scope

Cumulative effects of proposed activities on upland vegetation and noxious and invasive weeds are considered in the context of other activities and natural processes, described below. The area of analysis for cumulative effects to upland vegetation and weeds is the entire Juniper Mountain area, delineated roughly by the North Fork Owyhee River on the north, Deep Creek on the east, the Owyhee River on the south, and the Oregon border on the west, approximately 288,000 acres (Figure 4.1). This effects analysis area is appropriate for upland vegetation and noxious and invasive weeds because relevant disturbances, such as fire, livestock grazing, and weed movement affect ecological processes at this landscape scale, and it is expected that activities outside this area would generally not have additive effects to the activities proposed in this document. Within the cumulative effects analysis area, 89% of the area is public land managed by BLM, 7% is private land, and 4% is land managed by Idaho State. The cumulative effects area is much larger than the allotment acreage, in part because the allotment pastures extend over 20 miles north to south.

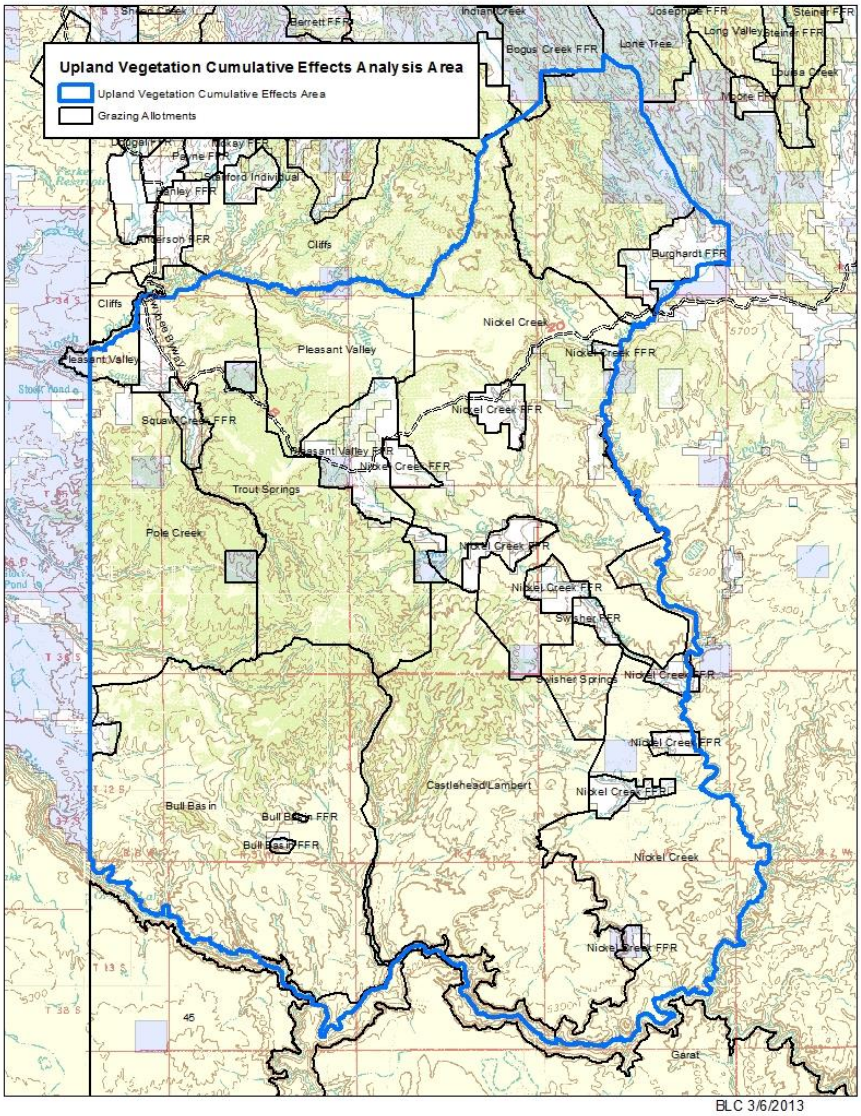

Figure 4.1 - Upland Vegetation Cumulative Effects Analysis Area

The timeframe considered covers past activities since about 1980 which created current conditions, activities planned within about the next three years (a typical planning cycle), and the expected duration of effects from those activities (generally 10 to 20 years) and their temporal overlap with direct and indirect effects described above.

4.1.2 Current Conditions

Past activities that have affected upland vegetation in the cumulative effects analysis area include livestock grazing and associated range improvements, juniper treatments including prescribed fires, roads and other infrastructure, agriculture, recreation, and wilderness designation. The impacts of these activities and resultant effects on vegetation are summarized in Table 4.1, and briefly discussed below.

The spatial extent of these actions was calculated using currently available BLM GIS data. The terms for magnitude of vegetation effects are defined as:

- Low – activity affects only a very small percentage of vegetation in the area, or has only a temporary effect on vegetation in a larger area;
- Moderate – activity affects more than a small percentage but less than a majority of the area with noticeable changes in vegetative structure, or affects a majority of the area with changes to vegetative species composition but not necessarily structure; and
- High – activity affects vegetation composition and structure within the majority of the area.

Table 4.1 – Past, Present and Reasonably Foreseeable Future Activities in Upland Vegetation Cumulative Effects Area

Activity	Timeframe	Indicator/Degree	Extent	Magnitude of Effect on Vegetation	Type of Effect
Past Livestock Grazing	Prior to 2003	13 active allotments; 15,385 active AUMs	Across analysis area	Moderate	Species composition shifts to less palatable plants and fewer large bunchgrasses
Livestock Grazing	Ongoing, continuous				Species should be maintained at a minimum, with improvement in the long-term.
Fences	Most constructed before 1980; a few additions each decade	Approximately 462 miles of fence total	Distributed across analysis area, but cumulatively covering a small percentage of area	Low	Short-term, localized construction & maintenance disturbance; chronic cattle trails trampling vegetation
Troughs, cattle-guards, corrals	Most constructed before 1980; a few additions each decade	Estimated 100-200 total	Distributed across analysis area, but cumulatively covering a small percentage of area	Low	Short-term, localized construction & maintenance disturbance; chronic cattle congregation trampling vegetation

Activity	Timeframe	Indicator/Degree	Extent	Magnitude of Effect on Vegetation	Type of Effect
Juniper Cutting or mastication	Intermittently since 1980s	Estimated <1,000 acres	Patchy within analysis area	High within cutting areas; moderately low across entire area	Shift from juniper-dominated to grass/forb/shrub-dominated plant community
Prescribed Burning	Mostly in 1980s	Estimated about 5,000 acres total burned	Patchy within analysis area	Moderately high within burn area; low across entire area	Shift from juniper-dominated to grass/forb/shrub-dominated plant community
Fire Suppression	Ongoing, continuous	Moderately effective at suppressing fires, given distance from fire stations, etc.	Across analysis area	Moderate	Long-term shift from shrub/grass to juniper-dominated plant communities
Roads	Nearly all in place before 1980	Approximately 410 miles of roads and routes total	Distributed across analysis area, but cumulatively covering a small percentage of area	High but localized, so overall moderately low	Elimination of vegetation; introduction of noxious and invasive weeds
Structures	Nearly all in place before 1980	A few ranch buildings, a few small cabins, a repeater, a campground	Mostly near Mud Flat Road, but some scattered, occupying a small percentage of the area	Moderately high in localized areas; low across entire area	Localized elimination of vegetation
Agriculture	Nearly all in place before 1980	Approximately 450 acres total	At ranches near Mud Flat Road	Moderately high in localized areas; low across entire area	Hayfields replacing native vegetation

Activity	Timeframe	Indicator/Degree	Extent	Magnitude of Effect on Vegetation	Type of Effect
Noxious Weed Treatment	Ongoing, continuous	Estimated <100 acres treated since 1980s	Patchy, mostly along Mud Flat Road	Low	A few adjacent native plants killed; native plant communities saved from noxious weed invasion
Recreation	Ongoing, continuous	Moderate visitor use of scenic byway summer-long; hunting season off-road travel and dispersed camping	Mostly near Mud Flat Road; hunting throughout area	Low	Localized vegetation trampling
Wilderness Designation	2009	72,840 acres	Along north and south edge of area	Low	Vehicle restrictions reduce plant disturbance

Livestock grazing is the dominant land use activity in the area. Vegetation in the Juniper Mountain area has been affected by livestock grazing because livestock selectively eat larger bunchgrasses, altering the species composition. Rest and deferred use pastures have increased in the past decade. Additionally, a variety of range improvements such as spring developments, fences, cattle-guards, and troughs have been implemented across the landscape to aid in livestock management; these improvements remove or disturb vegetation in localized areas. Native ungulates (deer and elk) are common in the Juniper Mountain area in moderately low numbers, and their browsing affects shrubs and aspen sprouts in some areas. Localized disturbances from wildfires, prescribed fires, and juniper cutting, mastication, and chaining have created small pockets of early seral vegetation in recent years. Prescribed fires began with the University of Idaho's Juniper Mountain Trials in 1979, but most activity occurred in the 1980s (USDI-BLM 1999a).

BLM records indicate that in the Juniper Mountain area approximately 39,000 acres of prescribed fire units were attempted, with about 5,000 acres of treatment recorded, thus affecting less than 2% of the Juniper Mountain area. A number of past and present designated firewood cutting areas on BLM- administered land and some chaining treatments (from the 1960s to early 1980s) have also taken place in the area. In addition, small (less than or equal to 100 acre) juniper cutting or mastication projects have occurred on private and State administered lands. Cumulatively, these treatments are estimated to have affected less than 10% of the cumulative effects area.

Fire suppression activities in the Juniper Mountain area have occurred sporadically for decades. Grazing (yearly reduction of fine fuels) and fire suppression (actively fighting fire spread across the landscape) have altered the fire regime by reducing the fuel load and the frequency of fires.

When climatic and fuel conditions become prone to extreme fire behavior, fires grow rapidly and burn more severely. Wildfire records indicate that approximately 58,700 acres (20%) have burned within the analysis area the 1980 and 2009 (Heide and Corbin 2009). Much of that was the 39,500-acre Crutcher Fire in 2007. In addition, the 2012 Grasshopper Fire burned about 2,700 acres.

Non-native invasive plants have been introduced and spread. Range improvements, roads, structures, and agriculture have created relatively small patches within the landscape where native vegetation has been removed. Ongoing noxious weed treatment (usually spot herbicide application) has been largely effective in keeping noxious weeds from spreading into intact native plant communities, with very minor collateral impact to adjacent non-targeted species. The acreage treated for noxious weeds is relatively small, so disturbance from these treatments is negligible at the cumulative effects analysis area scale.

The combination of activities described above has altered the vegetation on Juniper Mountain from what would be expected under a natural disturbance regime. The largest change is in the increase in density and area occupied by western juniper. Within the cumulative effects analysis area, western juniper historically occupied approximately 7% of the area, but currently occupies 35% of the area (based on data from Major, in review). Changes in species composition, with shifts toward less palatable species and the presence of non-native plants, are also evident across Juniper Mountain, although few areas dominated by non-natives exist. Synergistic interactions of these changes over time have stressed the ecosystem (Miller and Narayanan 2008). An example of these interactions is the combination of increased western juniper and selective grazing both negatively affecting large bunchgrasses.

Reasonably foreseeable activities that would substantially affect upland vegetation include grazing management changes (possible changes in season of use and reductions in AUMs) in other allotments in the analysis area (Pole Creek, Trout Springs, Castlehead/Lambert, Swisher Springs), and range improvements (up to 6 miles of fence construction, two new cattle-guards, one water haul site) and juniper treatment (potentially 44,300 acres gross or less than31,000 acres net) in Pole Creek and Trout Springs allotments. Juniper mastication is expected to continue on private lands within the analysis area; currently about 13,000 acres (gross) of mechanical juniper treatment is planned for private lands in Owyhee County as a whole, but little of this is within the analysis area (Joshua White NRCS personal communication 2013).

Expanding population in the Treasure Valley, the increasing popularity of off highway vehicles outside of wilderness area, and increased non-motorized use within wilderness areas, are together expected to create additional disturbances to vegetation within the cumulative effects analysis area. Because past recreation has had very little effect on vegetation in the cumulative effects area and because of the distance from major population areas, impacts from current and future recreation are expected to occur at a fairly low magnitude. As a result of these upcoming activities, along with the past and present activities described above, upland vegetation in the cumulative effects analysis area is expected to be a mosaic of plant communities, primarily juniper woodlands, mountain big sagebrush, and low sagebrush, with an understory of mostly perennial bunchgrasses and forbs.

Invasive weeds (cheatgrass and other annual grasses, bulbous bluegrass, etc.) are expected to be patchy, mostly at the lower elevations within the cumulative effects area, and generally subordinate to or occasionally co-dominant with native species, rather than defining the plant communities. Transportation planning and ongoing noxious weed treatments are expected to have little effect on upland vegetation within this cumulative effects analysis area. Noxious weed infestations would continue to be small and scattered, having little effect on overall vegetation.

4.1.3 Cumulative Effects of Alternatives

Grazing activities analyzed in this EA would contribute toward cumulative effects on upland vegetation and noxious and invasive weeds by incrementally influencing plant species composition and plant community biodiversity in the Juniper Mountain area, as described in direct and indirect effects. The magnitude of Nickel Creek FFR Allotment's incremental additions to effects from other activities (described above) is displayed in Table 4.2, and discussed below.

Alternatives A, B, and D would continue to permit 109 AUMs of use, which is no change from current conditions. Based on that level of use, cumulative effects would be extremely minor, and would basically result in the continuance of the same baseline (existing) conditions. Combined with reasonably foreseeable reductions in AUMs for some allotments within the analysis area, overall cumulative effects would be a slight reduction in livestock use area-wide, and a corresponding slight improvement in vegetative health. However, grazing 109 AUMs in Alternatives A, B, and D would have such slight direct and indirect impacts to the cumulative impact assessment area that cumulative impacts to vegetation are not expected.

Alternative C, no grazing for the term of the permit, would have beneficial, but very slight, cumulative effects by contributing no detrimental grazing effects to the cumulative effects analysis area. However, once again, reducing grazing within the cumulative impacts assessment area by 109 AUMs is unlikely to have any recognizable impact to vegetation in the large area. The minor increase in fine fuels resulting from no grazing could increase the risk of wildfire on public and private lands within the cumulative effects area.

Table 4.2 – Incremental effects of the proposed alternatives

Activity	Current Level (baseline)	Reasonably Foreseeable	Alternative A	Alternative B	Alternative C	Alternative D
Livestock Grazing	15,385 AUMs	Pole Creek - 576 AUMs; Castlehead/ Lambert - 1,136 AUMs, Swisher Springs -138 AUMs. Total: 12% reduction from baseline	No change from baseline; 0% change	No change from baseline; 0% change	-109 AUMs; 0.7% reduction from baseline	No change from baseline; 0% change

4.2 Watershed/Soils/Riparian/Water Quality

4.2.1 Scope of Analysis

The cumulative analysis area for watershed, soils, riparian, and water quality extends into four watersheds: North Fork Owyhee River, Headwaters Deep Creek, Deep Creek and Red Canyon-Owyhee River, with a cumulative area of 407,517 acres. This analysis area was chosen because grazing management impacts on riparian and watershed resources, as well as specific issues such as stream sediment and water temperature, are felt within these IDEQ fifth level HUCs. Outside of this area, however, effects of the grazing scheme would not be experienced and/or would be too small to create identifiable cumulative effects. For the soils resource, the cumulative effects area is considered to be the project area associated with active livestock management (active pastures) only and does not extend past that boundary. The timeframe considered covers past activities since about 1980 to create current conditions, activities planned within the next three years, and the expected duration of effects from those activities (generally 10 to 20 years).

4.2.2 Current Conditions

Past, present and reasonably foreseeable activities that have affected watersheds, soils, riparian, and water quality in the cumulative effects analysis area include livestock grazing and associated range improvements, juniper treatments including prescribed fires, roads and other infrastructure, agriculture, recreation, and wilderness designation.

Grazing activities analyzed in this EA would contribute toward cumulative effects on watersheds by incrementally influencing upland and riparian plant communities in the watershed area, as described in direct and indirect effects. Range improvements have minor direct and indirect effects on watersheds, which would have minimal cumulative effects.

Livestock grazing impacts in multiple allotments, when added together, can affect water quality by influencing upland and riparian plant communities, changing stream channel shape by increasing width to depth ratios, and streambank alterations in the watershed area, as described in direct and indirect effects. However, based on the level of use, cumulative effects would be the

same as baseline (existing) conditions. Combined with reasonably foreseeable reductions in AUMs for some allotments within the analysis area, overall cumulative effects would be a slight reduction in livestock use area-wide, and a corresponding slight improvement in the health of watersheds, or the functionality of riparian areas and wetlands, or steam channel/floodplain functionality.

Overall AUM changes, which only occur in Alternative C, are less than 1% of the cumulative AUMs and significant effects would be negligible. The three stream miles of improved water quality in the Nickel Creek FFR Allotment, when added to the improved water quality in 60 stream miles from the "reasonable foreseeable future" grazing permit renewal allotments, would not be a significant improvement (less than 1%) in water quality in the four watersheds. However, approximately one mile of Deep Creek may not improve as much as other stream reaches because the water quality impairments (elevated water temperature and sedimentation) are partially the result of land use practices on adjacent, upstream private lands. These are conservative estimates in that they do not take into account streams that have not been assessed, but would likely be meeting or be making significant progress towards meeting water quality standards with changes in grazing management. Cumulative effects of Alternative C, extended rest from livestock grazing, would result in greater and faster improvement than any other alternative due to lack of livestock impacts to the various resources, but when added to the cumulative effects, these effects, would be negligible for reasons stated above.

4.3 Fish and Wildlife/Special Status Animals

4.3.1 Scope

The area considered for cumulative effects can vary greatly by wildlife species and their distribution across the landscape. Wildlife species discussed in this EA have been grouped into two general categories based on their mobility and distribution; each category will be discussed individually (Figure 3.11.1). For all scales, analysis timeframes include past activities since approximately 1980 that have created the present conditions and future activities planned within the next three years, including the expected duration of effects from current and future activities (generally 10 to 20 years).

4.3.1.1 Greater Sage-Grouse (and other highly mobile upland species)

The cumulative effects analysis area for sage-grouse and other large and/or highly mobile species upland wildlife species (e.g., big game, raptors, and migratory birds) is delineated by the approximately 5.9 million acre sage-grouse Owyhee subpopulation, in north-central Nevada/southeast Oregon/southwest Idaho (Connelly et al. 2004) (Figure 4.2). This cumulative effects area encompasses all sage-grouse habitat within the Owyhee Field Office boundary, as well as additional adjacent habitat. Using sage-grouse as a focal species for this cumulative effects analysis is appropriate because they can serve as surrogates for sagebrush habitat and associated wildlife species (Rowland et al. 2006, Hanser et al 2011). This cumulative effects analysis area is appropriate for analyzing effects to wildlife (including special status animals) because relevant disturbances, such as fire, livestock grazing, and weed movement, affect ecological processes at a landscape scale within this area.

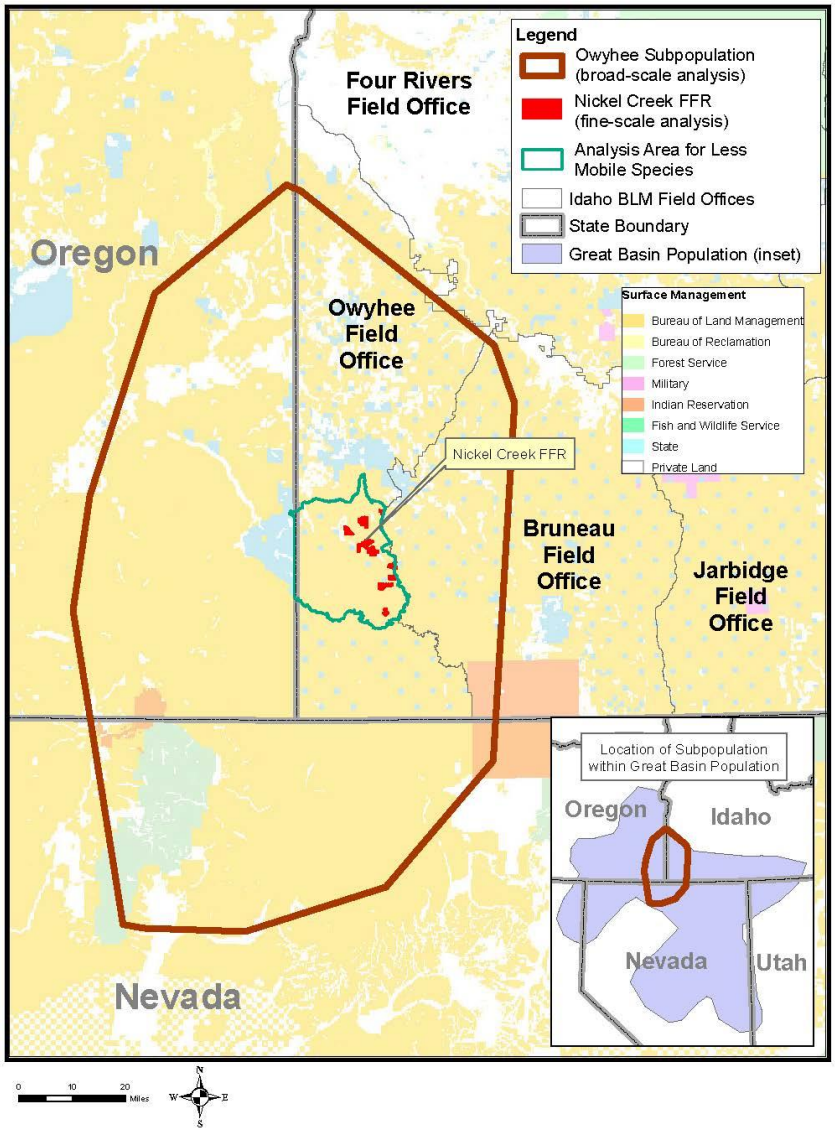

Figure 4.2 - Cumulative effects analysis areas for the Nickel Creek FFR Allotment

Given the current conservation importance of sage-grouse, it is logical to choose an analysis area that is biologically relevant to the species. The sage-grouse is an upland game-bird species that utilizes sagebrush habitats at multiple spatial scales. Stiver et al. 2010 described four orders of habitat selection for sage-grouse, from broad to fine scale, including

- the geographic range of the species in western North America;
- the physical and geographic range and habitat characteristics within populations and subpopulations, as well as dispersal between subpopulations;
- the habitat characteristics within a home range, and movements between seasonal ranges; and
- habitat characteristics within a specific seasonal range and movements to daily use sites.

Given the species' use of habitats at these multiple scales, an adequate cumulative effects analysis for actions that may affect the sage-grouse must incorporate a range of scales. This range of scales must be meaningful biologically and must also provide meaningful context relative to the scope of the activity being evaluated (e.g., grazing permit renewal). Selection of too broad an analysis area, such as the entire range of the species or a sage-grouse management zone, would likely dilute any potential cumulative effects of a grazing permit. The selection of too small an area, such as a portion of a pasture, may almost always show effects, regardless of alternative. For the following discussion, sage-grouse will be analyzed at both broad and fine scales.

Several authors (Connelly et al. 2004; Stiver et al. 2006; Garton et al. 2011) have delineated sage-grouse populations, sub-populations, and/or management zones across the range of the sage-grouse and some of these population delineations differ slightly spatially or by name. Connelly et al. (2004) identified the Great Basin Core population, which encompassed a large area overlying northern and southern Nevada, southeastern Oregon, northwestern Utah and southern Idaho, and subdivided these into smaller subpopulations. In a more recent analysis, Garton et al. (2011) delineated a Northern Great Basin population, which is essentially the northern portion of the Great Basin Core population, but he did not delineate subpopulations. The Northern Great Basin population delineation seems to fit more closely with what is currently understood about likely sage-grouse lek connectivity in the northern Great Basin (Makela and Major 2012), and the Connelly et al. (2004) "north-central Nevada/southeast Oregon/southwest Idaho" subpopulation provides meaningful context for the Owyhee analysis.

Broad Scale

The broad scale analysis area will be bounded by the north-central Nevada/southeast Oregon/ southwest Idaho (i.e. Owyhee) subpopulation of the Great Basin Core sage-grouse population as illustrated and described in Connelly et al. (2004) and Stiver et al. (2006) (Figure 3.11.1). This area encompasses all sage-grouse habitat within the Owyhee Field Office boundary, as well as additional adjacent habitat in southeastern Oregon, northern Nevada, and nearly 50% of the Bruneau Field Office. This area also incorporates all of the approximately 3,728,000 acres of sage-grouse currently occupied habitat within the Owyhee subpopulation.

Connelly et al. (2004) conducted a population analysis by state and not by management zone, population, or subpopulation; annual rates of change for sage-grouse in Idaho suggest a long-term decline for sage-grouse in Idaho. More recently, Garton et al. (2011) conducted a population analysis of the Northern Great Basin population based on data from 1965 to 2007. During the assessment period, the average number of male sage-grouse per lek in Zone IV decreased by 54% and the average number of males per active lek decreased by 39% (Garton et al. 2011). The average number of male sage-grouse per lek declined by 37% and the proportion of active leks decreased from 81% to 65% within the Northern Great Basin population of Zone IV (Garton et al. 2011). Garton et al. (2011) also projected a 73% decline in sage-grouse carrying capacity by 2037 within the Northern Great Basin population. Although the Garton et al. (2011) analysis is more detailed than the Connelly et al. (2004) analysis, both indicated similar trends for sage-grouse populations in Zone IV.

A summary of lek counts for the 514 documented leks contained within the Owyhee subpopulation can be found in Table 4.3. Because lek counts have only recently been conducted with any regularity, population trend information is not readily available for the Owyhee subpopulation of the Northern Great Basin population. Nevertheless, while the number of leks counted increased during the period from 2000-2010, the percentage of leks attended and the average number of sage-grouse per attended lek decreased substantially.

Table 4.3 - Summary of sage-grouse lek counts and attendance within the Owyhee subpopulation boundary

Survey Year	# of Leks Surveyed	# (%) of Leks Attended[1]	# of Male Sage-grouse Counted	Avg # of Male Sage-grouse / Attended Lek
2000	47	35 (74%)	606	13
2001	77	59 (77%)	1,195	16
2002	42	33 (79%)	676	16
2003	95	68 (72%)	2,423	26
2004	105	72 (69%)	1,786	17
2005	209	106 (51%)	2,775	13
2006	109	67 (61%)	1,620	15
2007	178	92 (52%)	1,781	10
2008	274	94 (34%)	1,297	5
2009	180	50 (46%)	665	4
2010	318	98 (31%)	1,849	6

1 - Based on the presence of 2 or more males observed during surveys

Fine Scale

The fine scale analysis area will incorporate the approximately 9,810 acres bounded by the Nickel Creek FFR Allotment (Figure 4.2). This cumulative effects analysis area is logical for analyzing direct and indirect effects to wildlife and fisheries (including special status animals) that occur within the allotment boundaries. No known leks occur within the Nickel Creek FFR Allotment. The proportion of sage-grouse habitat within the allotment is discussed in Section 3.3.1.

4.3.1.2 Columbia Spotted Frogs (and other localized upland and riparian species)

The cumulative effects analysis area for Columbia spotted frogs and other small, localized, and less mobile species (e.g., small mammals, fish, reptiles, amphibians) is the entire Juniper Mountain area (delineated roughly by the North Fork Owyhee River on the north, Deep Creek on the east, the Owyhee River on the south, and the Oregon border on the west), approximately 288,000 acres (Figure 4.2). Using spotted frogs and redband trout as a focal species for this cumulative effects analysis is appropriate because they serve as rough surrogates for the relative integrity of lentic and lotic habitats and associated wildlife species (Reaser 1996, Thurow et al. 1997). This cumulative effects analysis area is appropriate for analyzing effects to wildlife and fisheries (including special status animals) because relevant disturbances, such as fire, livestock grazing, and weed movement, affect ecological processes at a landscape scale within this area.

4.3.2 Current Conditions

4.3.2.1 Greater Sage-Grouse (and other highly mobile upland species)

Broad Scale

Past, present, and reasonably foreseeable activities that have affected large and/or highly mobile wildlife species within the broad and mid-scale the cumulative effects analysis area include livestock grazing and associated range improvements, juniper treatments including prescribed fires, roads and other infrastructure, agriculture, recreation, and wilderness designation. The impacts of these activities and resultant effects are summarized in Table 3.11.7. The spatial extent of these actions was calculated using the best available BLM GIS data. The terms for magnitude of effect on fish and wildlife species are defined as:

- Low – activity affects only a very small percentage of fish and wildlife habitat in the area, or has only a temporary effect on these attributes in a larger area;
- Moderate – activity affects more than a small percentage but less than a majority of the area with noticeable changes in fish and wildlife habitat including soil loss or degradation, vegetative structure, water quality, or affects a majority of the area with changes to vegetative species composition but not necessarily structure; and High – activity affects vegetation composition and structure within the majority of the area, large areas of noticeable soil loss or degradation, and streams with diminished water quality.
- High – activity affects vegetation composition and structure within the majority of the area, large areas of noticeable soil loss or degradation, and streams with diminished water quality.

Table 4.4 - Past, present, and foreseeable future actions within the broad scale cumulative effects analysis area for highly mobile wildlife species

Activity	Timeframe	Degree	Extent	Magnitude of Effect on Wildlife Habitat	Type of Effect
Past Livestock Grazing	Prior to 2003	251 active BLM allotments	Across analysis area	Moderate across entire area	Habitat degradation due to species composition shifts to less palatable plants and fewer large bunchgrasses
Livestock Grazing	Current and on-going				Maintenance of habitat to slight improvement to vegetative communities and associated habitat.

Activity	Timeframe	Degree	Extent	Magnitude of Effect on Wildlife Habitat	Type of Effect
Wildfire	Intermittently since 1980s	Approximately 1,092,000 acres	Patchy within analysis area	Moderately high within burned areas, moderate across entire area	Shift from juniper/shrub-dominated to native or exotic grass/forb/shrub-dominated plant community
Vegetation Treatments (Prescribed Fire and Mechanical)	Intermittently since 1950s	At least 28,000 acres	Patchy within analysis area	Moderately high to high within treatments, low across entire area	Shift from juniper/shrub-dominated to native or exotic grass/forb/shrub-dominated plant community
Fire Suppression	Ongoing, continuous	Moderately effective at suppressing fires, given distance from fire stations, etc.	Across analysis area	Moderate across entire area	Long-term shift from shrub/grass to juniper-dominated plant communities
Roads	Nearly all in place before 1980	Approximately 8,100 miles of roads and routes total	Distributed across analysis area, but cumulatively covering a small percentage of area	High but localized, so overall moderately low	Habitat fragmentation due to elimination of vegetation; introduction of noxious and invasive weeds
Agriculture	Ongoing, nearly all in place before 1980	Approximately 621,200 acres total	Distributed across analysis area, but cumulatively covering a small percentage of area	Moderately high in localized areas; low across entire area	Hayfields replacing native vegetation; anthropogenic disturbances

Activity	Timeframe	Degree	Extent	Magnitude of Effect on Wildlife Habitat	Type of Effect
Recreation	Ongoing, continuous	Moderate visitor use of scenic byway summer-long; hunting season off-road travel and dispersed camping	Mostly near scenic byways; hunting throughout area	Low	Localized vegetation trampling; anthropogenic disturbances

In much of the analysis area, upland, riparian, and stream habitats have been adversely affected by grazing practices (e.g., season of use, stocking rates), rangeland management infrastructure (e.g., fences, water developments), wildfire, vegetation treatments (e.g., prescribed fires, shrub and conifer control, seedings), and habitat fragmentation due to buildings, roads, and transmission line. As a result, wildlife habitats and populations in the analysis area have been altered from the conditions before Euroamerican colonization of North America and what would be expected under a natural disturbance regime.

In addition, across their distribution, some wildlife species' populations (i.e., sage-grouse and bighorn sheep) have been impacted by disease (i.e., West Nile virus and pneumonia, respectively). Although these diseases currently do not appear to be an issue with local sage-grouse and bighorn sheep, West Nile virus (WNV) has been documented in sage-grouse in Idaho and in 2006, the sage-grouse hunting season was closed in western Owyhee County due to concerns of WNV impacts (ISAC 2008). Large, intact, low- to mid-elevation populations, like those in the cumulative effects area, may be able to endure impacts of WNV if the quality and extent of available habitat still supports positive population growth (Naugle et al., 2011). There appears to be a relatively low risk of contraction of pneumonia by Owyhee River PMU bighorn sheep because the primary vectors of transmission, domestic sheep, do not overlap with the local population.

Native ungulates (deer, elk, pronghorn, and bighorn sheep) are common in the analysis area and long-distance, interstate movements to seasonal ranges have been documented. The surrounding deep canyons of the Owyhee River system provide relatively undisturbed cliff nesting habitat for a variety of wide-ranging raptors (e.g., golden eagle and prairie falcon) and bird species. The abundant juniper woodlands provide an expanding habitat type for forest-associated species (e.g., northern goshawk and flammulated owl) in an otherwise shrub steppe matrix. Woodland species' populations have benefited from fire suppression activities that have promoted juniper expansion at the expense of shrub-dependent species such as sage-grouse, Brewer's and sage sparrows, and loggerhead shrike. Riparian areas, although many not in properly functioning condition, do support limited populations of spotted frog and redband trout. Although populations of some notable species (e.g., sage-grouse) have declined rangewide, population

trends in the analysis area for most fish, wildlife, and special status species are unknown because long-term monitoring data are lacking.

Wildlife, fisheries, and special status species and their habitats in the analysis area have been affected by livestock grazing for more than a century. Allotments in this area are grazed, primarily, throughout the spring and summer. A variety of range improvement projects, such as spring developments, fences, cattle guards, and troughs, have been built across the landscape to aid in livestock grazing management. Allotments in the analysis area are in various stages of the 10-year permit cycle, and as expiration dates approach, each allotment will be evaluated for rangeland health and progress toward meeting the Idaho Rangeland Health Standards prior to the authorization of a new permit. Overall, past and current grazing in the cumulative effects area has had an adverse effect on fish and wildlife habitats because grazing has primarily occurred during the spring and summer months, when native perennial vegetation in the uplands is actively growing and most susceptible to the negative effects of defoliation, and soils and vegetation in riparian areas are impacted by continual presence and heavy use of these comparatively moist and cooler environments. Reasonably foreseeable future grazing management is expected to improve the condition of fish and wildlife habitats at least to make significant progress towards meeting the Idaho Rangeland Health Standards.

Wildfire records maintained by the BLM indicate that approximately 19 percent of the broad scale cumulative effects area has burned between 1985 and 2012. Wildfires have primarily removed shrub steppe habitats which negatively impact many special status species including sage-grouse. Although wildfires are a natural and critical component in the restoration of late-seral communities in the cumulative effects area, invasive species such as cheatgrass and medusahead wild rye presently colonize and infest low elevation burned areas first, outcompete and displace native species, and foster a shorter fire-return cycle to the detriment of the establishment and return of native shrub steppe communities and wildlife habitat. Conversely, fire suppression has enabled western juniper to expand into shrub steppe communities and slowly convert encroached areas into woodlands which precludes many of the obligate and dependent wildlife species that occupied the former shrub and grasslands.

Less than 0.5 percent of the cumulative effects area has been affected by vegetation treatments. Vegetation treatments include prescribed fires, juniper and sagebrush control, and non-native perennial grass seedings. Due to the relatively limited and small size of treatment areas, effects of vegetation treatments within the cumulative effects area have been negligible.

Approximately 11 percent of the cumulative effects area is comprised of agricultural lands, the majority of which are hay fields in support of local grazing operations. Most of this acreage occurs along the region's rivers and streams. Due to these practices, the former riparian habitats in many of these floodplain areas are deteriorated or absent. Although these areas have been substantially altered, they still provide valuable, albeit marginal, habitat for many wildlife species.

More than 8,000 miles of roads of varying surface types and use levels occur within the cumulative effects area. Although some of these miles comprise major roads and highways, the overwhelming majority are low use, unmaintained two-tracks. Major paved and graveled roads

fragment habitat to a far greater extent than unmaintained dirt roads. Although roads present both spatial and temporal barriers to home range, dispersal, and migratory movements of a variety of wildlife species, the low population density of the cumulative effects area and relatively low use levels of most roads limits many of the negative effects and disturbance associated with transportation networks.

Reasonably foreseeable activities that would substantially affect upland wildlife habitats include grazing management changes (possible changes in season of use and reductions in AUMs) in other allotments in the analysis area (Pole Creek, Trout Springs, Castlehead/Lambert, Swisher Springs), and range improvements (up to 6 miles of fence construction, two new cattle-guards, one water haul site) and juniper treatment (potentially 44,300 acres gross or less than31,000 acres net) in Pole Creek and Trout Springs allotments. Juniper mastication is expected to continue on private lands within the analysis area; currently about 13,000 acres (gross) of mechanical juniper treatment is planned for private lands in Owyhee County as a whole (Joshua White NRCS personal communication 2013).

Expanding population in the Treasure Valley, the increasing popularity of off highway vehicles outside of wilderness area, and increased non-motorized use within wilderness areas, are together expected to create additional disturbances to vegetation/wildlife habitat within the cumulative effects analysis area. Because past recreation has had very little effect on wildlife habitat in the cumulative effects area and the distance from major population areas, impacts from current and future recreation expected to occur at a fairly low magnitude. As a result of these upcoming activities, along with the past and present activities described above, upland vegetation/wildlife habitat in the cumulative effects analysis area is expected to be a mosaic of plant communities, primarily juniper woodlands, mountain big sagebrush, and low sagebrush, with an understory of mostly perennial bunchgrasses and forbs.

Invasive weeds (cheatgrass and other annual grasses, bulbous bluegrass, etc.) are expected to be patchy, mostly at the lower elevations within the cumulative effects area, and generally subordinate to or occasionally co-dominant with native species, rather than defining the plant communities. Transportation planning and ongoing noxious weed treatments are expected to have little effect on wildlife habitat within this cumulative effects analysis area. Noxious weed infestations would continue to be small and scattered, having little effect on overall vegetation.

Fine Scale

The past, present, and reasonably foreseeable future actions within the fine scale cumulative effects analysis areas relevant to large and/or highly mobile wildlife species are presented in Table 4.5. Except where noted below, general effects within the fine scale cumulative effects analysis area for large and/or highly mobile wildlife species are the same as those identified in the broad and mid-scale analysis discussion. The spatial extent of these actions was calculated using the best available BLM GIS data.

Table 4.5 - Past, present, and foreseeable future actions within the fine scale cumulative effects analysis area for highly mobile wildlife species

Activity	Timeframe	Degree	Extent	Magnitude of Effect on Wildlife Habitat	Type of Effect
Past Livestock Grazing	Prior to 2003	1 active BLM allotment	Across analysis area	Moderate across entire area	Habitat degradation due to species composition shifts to less palatable plants and fewer large bunchgrasses
Livestock Grazing	Current and on-going				Maintenance of habitat to slight improvement to vegetative communities and associated habitat.
Wildfire	Intermittently since 1980s	Approximately 800 acres	Patchy within analysis area	Moderately high within burned areas, low across entire area	Shift from juniper dominated to native grass/forb/shrub-dominated plant community
Vegetation Treatments (Prescribed Fire and Mechanical)	Intermittently since 1950s	< 6,000 acres	Patchy within analysis area	Moderately high to high within treatments, low across entire area	Shift from juniper dominated to native grass/forb/shrub-dominated plant community
Fire Suppression	Ongoing, continuous	Moderately effective at suppressing fires, given distance from fire stations, etc.	Across analysis area	Moderate across entire area	Long-term shift from shrub/grass to juniper-dominated plant communities
Roads	Nearly all in place before 1980	Approximately 21 miles of roads and routes total	Distributed across analysis area, but cumulatively covering a small percentage of area	High but localized, so overall moderately low	Habitat fragmentation due to elimination of vegetation; introduction of noxious and invasive weeds

Activity	Timeframe	Degree	Extent	Magnitude of Effect on Wildlife Habitat	Type of Effect
Agriculture	Ongoing, nearly all in place before 1980	Approximately 51acres total	Distributed across analysis area, cumulatively covers a large percentage of area	Moderately high in localized areas; low across entire area	Anthropogenic disturbances due to ranching activities
Recreation	Ongoing, continuous	Moderate visitor use of scenic byway summer-long; hunting season off-road travel and dispersed camping	Mostly near scenic byways; hunting throughout area	Low	Localized vegetation trampling; anthropogenic disturbances

Wildfire records maintained by the BLM indicate that approximately eight percent of the fine scale cumulative effects area has burned between 1985 and 2012. The effects of such, as well as those from wildfire suppression, are the same as described above.

Less than ten percent of the cumulative effects area has been affected by vegetation treatments. Due to the relatively limited and small size of treatment areas, effects of vegetation treatments within the cumulative effects area have been negligible.

Approximately two percent of the cumulative effects area is comprised of agricultural lands, the majority of which support local grazing operations.

Approximately 21 miles of roads of varying surface types and use levels occur within the cumulative effects area.

Reasonably foreseeable activities that would substantially affect upland wildlife habitats are the same as described above. Juniper mastication is expected to continue on private lands within the analysis area; currently about 13,000 acres (gross) of mechanical juniper treatment is planned for private lands in Owyhee County as a whole, but little of this is within the analysis area (Joshua White NRCS personal communication 2013).

The past, present, and reasonably foreseeable future actions within the cumulative effects analysis area relevant to small and/or less mobile wildlife species, including Columbia spotted frogs and pygmy rabbits, are presented in Table 4.6. Except where noted below, general effects within the cumulative effects analysis area for less mobile wildlife species are the same as those

identified in the broad scale analysis discussion for large and/or highly mobile wildlife species. The spatial extent of these actions was calculated using the best available BLM GIS data.

Table 4.6 - Past, present, and foreseeable future actions within the cumulative effects analysis area for less mobile wildlife species

Activity	Timeframe	Degree	Extent	Magnitude of Effect on Wildlife Habitat	Type of Effect
Past Livestock Grazing	Prior to 2003	13 active allotments	Across analysis area	Moderate	Habitat degradation due to species composition shifts to less palatable plants and fewer large bunchgrasses
Livestock Grazing	Current and on-going				Maintenance of habitat to slight improvement to vegetative communities and associated habitat
Wildfire	Intermittently since 1980s	Approximately 56,900 acres	Patchy within analysis area	Moderately high within burned areas, low across entire area	Shift from juniper dominated to native grass/forb/shrub-dominated plant community
Vegetation Treatments (Prescribed Fire and Mechanical)	Intermittently since 1950s	At least 6,000 acres	Patchy within analysis area	Moderately high to high within treatments, low across entire area	Shift from juniper dominated to native grass/forb/shrub-dominated plant community
Fire Suppression	Ongoing, continuous	Moderately effective at suppressing fires, given distance from fire stations, etc.	Across analysis area	Moderate	Long-term shift from shrub/grass to juniper-dominated plant communities

Activity	Timeframe	Degree	Extent	Magnitude of Effect on Wildlife Habitat	Type of Effect
Roads	Nearly all in place before 1980	Approximately 410 miles of roads and routes total	Distributed across analysis area, but cumulatively covering a small percentage of area	High but localized, so overall moderately low	Habitat fragmentation due to elimination of vegetation; introduction of noxious and invasive weeds
Agriculture	Nearly all in place before 1980	Approximately 450 acres total	At ranches near Mud Flat Road	Moderately high in localized areas; low across entire area	Hayfields replacing native vegetation; anthropogenic disturbances
Noxious Weed Treatment	Ongoing, continuous	Estimated <100 acres treated since 1980s	Patchy, mostly along Mud Flat Road	Low	A few adjacent native plants killed; maintains native plant communities
Recreation	Ongoing, continuous	Moderate visitor use of scenic byway summer-long; hunting season off-road travel and dispersed camping	Mostly near Mud Flat Road; hunting throughout area	Low	Localized vegetation trampling; anthropogenic disturbances
Wilderness Designation	2009	72,840 acres	Along north and south edge of area	Low	Vehicle restrictions reduce wildlife disturbance

Wildfire records maintained by the BLM indicate that approximately 20 percent of the cumulative effects area has burned between 1985 and 2012.

Approximately 2 percent of the cumulative effects area has been affected by vegetation treatments.

Less than 0.2 percent of the cumulative effects area is comprised of agricultural lands.

Approximately 410 miles of roads of varying surface types and use levels occur within the cumulative effects area.

Reasonably foreseeable activities that would substantially affect upland wildlife habitats include grazing management changes (possible changes in season of use and reductions in AUMs) in other allotments in the analysis area (Pole Creek, Trout Springs, Castlehead/Lambert, Swisher Springs), and range improvements (up to 6 miles of fence construction, two new cattle-guards, one water haul site) and juniper treatment (potentially 44,300 acres gross or less than 31,000 acres net) in Pole Creek and Trout Springs allotments. Juniper mastication is expected to continue on private lands within the analysis area; currently about 13,000 acres (gross) of mechanical juniper treatment is planned for private lands in Owyhee County as a whole (Joshua White NRCS personal communication 2013).

Future grazing management is expected to improve the condition of fish and wildlife habitats at least to make significant progress towards meeting the Idaho Rangeland Health Standards. Transportation planning and ongoing noxious weed treatments are expected to have little effect on wildlife habitat within this cumulative effects analysis area.

Cumulative Effects of Alternatives

Grazing activities analyzed in this EA would contribute toward cumulative effects on upland and riparian wildlife habitat and associated wildlife species by incrementally influencing plant species composition and plant community biodiversity in all cumulative effects analysis areas, as described in direct and indirect effects. The magnitude of Nickel Creek FFR Allotment's incremental additions to effects from other activities (described above) is displayed in Table 3.11.10 and discussed below.

Each alternative would maintain or improve wildlife habitats, the additive effects from each alternative to cumulative effects at all scales are expected to be minor.

Alternatives A, B, and D would continue to permit 109 AUMs of use, which is no change from current conditions. Based on that level of use, cumulative effects would be extremely minor, and would basically result in the continuance of the same baseline (existing) conditions. Combined with reasonably foreseeable reductions in AUMs for some allotments within the analysis areas, overall cumulative effects would be a slight reduction in livestock use area-wide, and a corresponding slight improvement in habitat conditions. However, grazing 109 AUMs in Alternatives A, B, and D will have such slight direct and indirect impacts to the cumulative impact assessment areas that cumulative impacts would not occur.

There are no cumulative effects and risk of sage-grouse fence collisions with Alternatives A, B, and D because no new fence construction would occur within sage-grouse habitat. In addition, the cumulative effects and risk of propagation and transmission of West Nile Virus (WNV) are not expected to increase with these alternatives because none involve water developments that would increase breeding habitat for WNV vector species.

Sage-grouse PPH within the Nickel Creek FFR Allotment is primarily connected to large areas of sagebrush habitat in the Nickel Creek Allotment and to the east in the Bruneau Field Office. Trend information for the Owyhee subpopulation is limited as leks are surveyed infrequently primarily due to inaccessibility. Trends in sage-grouse populations at the broadest scale in this analysis (i.e., population level) are more readily available. A recent analysis shows that the proportion of active leks and the average number of males per active lek has decreased over the last 40 years within the Northern Great Basin population (Garton et al. 2011). The minimal effects to the sage-grouse population from grazing management actions occurring in the Nickel Creek FFR Allotment would have a negligible effect on the viability of the regional Northern Great Basin population or the species range-wide.

Maintenance or improvement of wildlife habitat within the Nickel Creek FFR Allotment could occur in the short term (3-5 years, depending on the current degradation and ecological resiliency of the site) and would continue through the term of the permit; progress toward meeting the Idaho Rangeland Standard for special status animals would occur. Nevertheless, due to the relatively small size of the allotment, the effects to the majority of fish and wildlife populations, including the Owyhee sage-grouse subpopulation, would most likely be negligible across all cumulative effects analysis areas.

Alternative C, extended rest for the term of the permit, would be quite different from typical management in the cumulative effects analysis areas, and have beneficial cumulative effects by contributing no detrimental grazing effects to the cumulative effects analysis areas. However, at each scale (fine and broad) those beneficial cumulative effects would be extremely small and probably undetectable given how small the direct and indirect effects from permitted grazing would be (only 109 AUMs) on the cumulative impacts assessment area. The undisturbed mosaic of habitats could augment fish and wildlife populations in the allotment and could provide a productive source area for surrounding allotments. However, sage-grouse fence collision risk may increase in Pastures 11, 14, 19, and 25 if landowners construct new fences on private land in order to prevent cattle from grazing on BLM land within the Nickel Creek FFR Allotment. The minor increase in fine fuels resulting from no grazing could also increase the risk of wildfire on public and private lands within the cumulative effects area.

The expected improvements considered cumulatively with other activities would benefit fish and wildlife habitat and populations within the Nickel Creek FFR Allotment overall. However, due to the size of the allotment, improving fish and wildlife populations within it would negligibly contribute to more robust regional fish and wildlife populations across all other cumulative effects analysis areas. Alternative C would result in greater and faster improvement than any other alternative due to lack of livestock impacts to the various resources, but when added to the cumulative effects, these effects would be negligible for reasons stated above.

4.4 Grazing Management

4.4.1 Scope of Analysis

The scope of this cumulative effects analysis area for livestock grazing is approximately 122,575 acres (public, private, and Idaho State Lands), and includes four BLM grazing allotments (Nickel Creek, Castlehead /Lambert, Swisher FFR, and Swisher Springs) that are adjacent to the Nickel

Creek FFR Allotment and have JMGA members who graze on the Nickel Creek FFR Allotment. One of the four allotments has been fully processed (final decision implemented). The remaining three allotments (Castlehead /Lambert, Swisher Springs, and Swisher FFR) have proposed decisions or are in the process of completing final decisions. The time considered begins in 1997 when Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management were initiated and ends in 2023 when the Nickel Creek FFR Allotment would be renewed again.

4.4.2 Current Conditions

Livestock grazing in the region dates back to the late 1800s and remains the dominant land use of the cumulative effects area. Throughout its history, ranching remains a dispersed activity characterized by rural communities and provides important income to the area.

Within these allotments there are other land uses that have occurred and are planned to occur for the next 10 years. These land uses include wildfire management and suppression, approximately 300 acres of juniper removal on private land, recreation use on private and public land, annual road maintenance on Mud Flat Road, and annual grazing on private and public land.

4.4.3 Cumulative Effects - Grazing Management

Implementation of Alternatives A - D would maintain or improve land health standards. Past and present actions, in combination with future planned activities would have negligible effects on livestock grazing management as long as the ranch remains in business. Effects to resources from grazing are likely to change and resources (soil, vegetation, water) improve throughout the area from historical conditions. Along with the past, present, and reasonable foreseeable future actions described above, an incremental improvement in ecological condition over a period of time is expected, therefore benefitting the sustainability of the livestock/ranching industry and livestock management.

4.5 Cultural Resources

4.5.1 Scope of Analysis

Because the Nickel Creek FFR allotment is comprised of fragmented parcels scattered over a large area with some geographic commonalities, the Nickel Creek Allotment, Nickel Creek FRR Allotment, and a quarter mile buffer of surrounding land are considered in this analysis. Most sites are prehistoric lithic scatters with no remaining perishable materials on the surface, subjected to a wide variety of impact agents over hundreds to thousands of years. Reconstruction of the exact nature of the original conditions is impossible, and the best frame of reference is the condition upon original scientific recording. Recording dates range between 1959 and 2011, but most were recorded in the 1970s for academic research projects.

4.5.2 Current Conditions

Unrecorded features and stratified deposits are generally impossible to reproduce or repair if damaged. Even minor impacts to sites such as small holes or removal of single artifacts will eventually lead to loss of significance. Impacts listed on previous site forms within the general Nickel Creek area include cattle grazing; erosion; and, at one historic site, a case of vandalism (apparent intentional artifact breakage) and disturbance from road activity. The historic site was

deemed ineligible due to a lack of information potential rather than disturbance. Most site forms have a check-list of impacts, which tends to encourage listing any evident use as an impact, with notes reserved for unusual or serious disturbance. For example, "grazing impacts" may simply refer to hoof prints or dung observed at sites. Fencing and topography restrict cattle access at two of the more potentially significant sites, and grazing impacts were described as absent at both.

Ranching is an important part of the cultural history of southwest Idaho, but has also affected the state of other cultural resources in the region. By the 1840s, the Oregon Trail was bringing thousands of people, horses, mules, oxen, and cattle through the area. After gold was discovered there in 1862, drovers began moving herds numbering into the thousands across Idaho to feed miners and other markets (Yensen 1982). Over the last century, there have been general improvements in grazing management practices that mitigate potential devegetation, erosion, and other disturbances that can affect site significance. Most sites in the Nickel Creek area are lithic scatters and would have been subjected to hundreds or thousands of years of natural surface impacts such as wildfires, wildlife use including burrowing, heavy rain and snow fall, toppling and uprooting of trees, etc. Sites at or within 10 cm of the surface are expected to have been exposed to some vertical and horizontal artifact movement, breakage from trampling, fire exposure, and other natural and human-related impacts.

With the exception of the non-eligible historic trash scatter, all of the sites with disturbance noted retain the potential for NRHP eligibility, and few new impacts to surface site components would be expected from grazing after over a hundred years of grazing that was often at more intensive levels than current, which no or fewer restrictions. A review of existing site records suggest that grazing activities have not caused any irreversible impacts to known cultural resources in the area that would lead to a change in archaeological site significance.

No new roads are planned, though if roads currently bisect unrecorded sites, repeated use may cause some additional erosional and artifact breakage effects over small portions of sites.

The 2007 Crutcher fire had no lasting impacts on surface artifacts observed during site monitoring in an allotment adjacent to Nickel Creek. Fires can destroy historic wooden structures and potentially exfoliate rock art panels. Invasive species such as Russian thistle and a historic tendency towards fire suppression have increased that risk. Prescribed burns that avoid such resources can help protect them by limiting fuels and the likelihood of wildfires.

Intentional removal and destruction of rock art panels is another threat. Panels are rare in the area and important not only for understanding ancient culture and technology, but also for their significance to tribal members and others who experience the works in their natural context. Recorded panels in the area have little potential for cattle impacts due to their positions on the landscape and fence placement. Several unrecorded panels could be present based on expected site density. Careful recording and monitoring can assist with data preservation and management decisions. No range improvements are currently planned, but NEPA and/or NHPA section 106 require cultural inventory prior to any future ground disturbing activities that might affect cultural resources, and mitigation plans would be developed in consultation with the SHPO and affected tribes, as needed.

Both Native American and ranching lifestyles depended upon expansive and sparsely populated regions for subsistence, learning through hands-on experience, intimate knowledge of the environment, and deeply rooted kinship and neighbor relationships. Although human use of the area has evolved over centuries and decades, important traditions have survived and the historic places and practices associated with this landscape remain vital to local people as well as to a sense of national identity as an embodiment of western independence and resiliency. The preservation of sites to inform us about unwritten aspects of history and lifeways is vital as many remote areas like those found in Owyhee County become fragmented, urbanized, and transformed. The best way to preserve the contextual relationships of potentially NRHP eligible ranch sites is through a continuation of the ranching lifestyle (Vlahos 2005). Access to culturally significant resources should be maintained, and the aesthetics of important traditional use areas should be preserved to the degree possible. Current laws and regulations facilitate these practices.

4.5.3 Cumulative Effects

The direct and indirect effects would add on to the existing effects to cultural resources. Cumulative effects of trampling, artifact breakage, and site erosion are expected to be minimal under all alternatives. However, most effects to cultural resources are permanent and must be carefully considered.

Cumulative effects from dispersed grazing that would affect the potential for sites in those pastures to contribute to an understanding of regional culture history, even over the next century, would not be foreseen under any alternative within the next decade. There are no congregation areas or specific areas where disturbances might be a concern within the FFR. Access to sites or other cultural or traditionally used resources in the area would continue for tribes as it has in the past.

Cumulative effects under Alternative C could be slightly greater over the longer term, if fences are constructed and fence lines are repeatedly moved as ownership and management are changed, particularly over the course of decades and centuries.

5.0 Consultation and Coordination

Through the scoping process the BLM coordinated with the affected tribes, permittees, IDFG and other interested publics as described in section 1.7. SHPO has been consulted.

5.1 List of Preparers

Peter Torma – Grazing Management, Socioeconomics, and Team Lead
Beth Corbin – Upland Vegetation, Noxious and Invasive Weeds, and Special Status Plants
Brad Jost – Fish, Wildlife, and Special Status Animals
Thomas J. Clifford – Watershed, Soils, Riparian, and Water Quality
Ryan Homan – Recreation, Visual Resources, Wilderness, and Lands with Wilderness Characteristics
Kelli Barnes – Cultural and Paleontological Resources

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7.0 Appendices

A - Evaluation and Determination

B – Response to Scoping Comments

C – Plant Names used in the EA

D – Soil Series Descriptions

E – Response to Draft EA Comments

F – Special Status Animals

G – Migratory Birds

H – Monitoring Protocol